

VOCATIONALISATION OF EDUCATION

Dr. G. SHIVARUDRAPPA

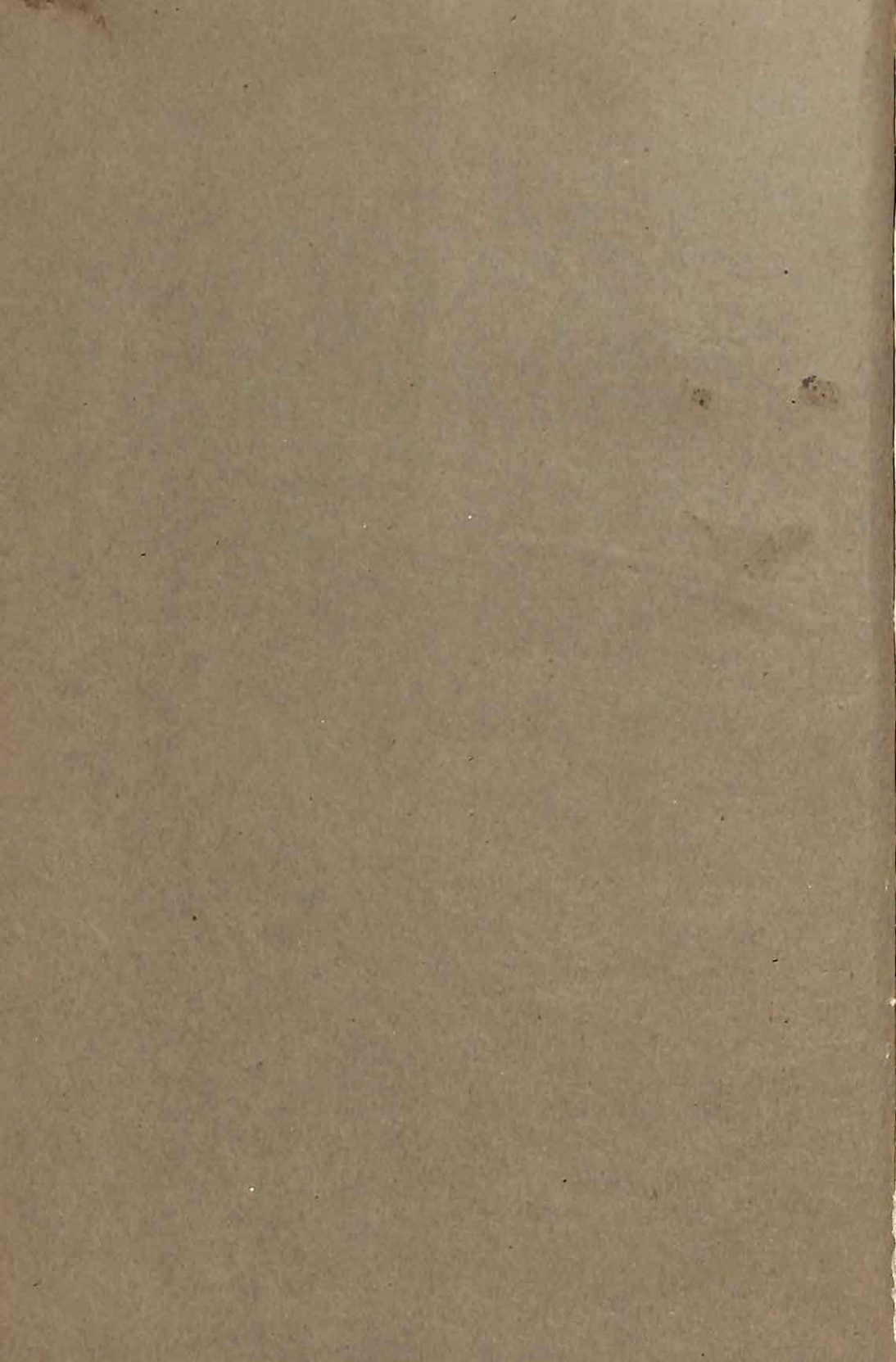


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ABOUT THE BOOK

While the need for harnessing unspent manpower to productivity cannot be overlooked in a developing country, the importance of proper job training and the placement of manpower potential entering schools and colleges cannot be over-emphasised in a system of education which suffers from some undesirable fixation, such as over-verbalism and the absence of opportunity for work skills. The book on *Vocational Education: Problems and Prospects* attempts to deal with the subject of vocationalisation of education from a total perspective that should furnish the student and the expert alike with the incentive to undertake a study of the existing programmes and planning and the implementation of new programmes of vocational education. A wide spectrum of topics has been treated: vocationalisation in democracy; methods in vocationalisation; vocationalisation at the higher secondary level; planning for vocationalisation; integration of higher education; criteria for admission; recommendations of commissions; vocationalisation in different states in India and in other countries; and strategies for the implementation of the programme of vocationalisation. Indeed the book is of eminence interest to those who are concerned about vocationalisation in the field of education.

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PREFACE

Equality of opportunity in our present system of education is not within the reach of our children. While our schools are opened freely to every child, their aims and purposes are such that a majority of the children are unable to take advantage of them beyond a certain grade and do not secure at public expense a preparation for their work in life. Although here and there we see the beginnings of change, it is still true that the schools are largely planned for the few who prepare for college rather than for the large number who go into industry.

More than even and for an ever increasing proportion of the population, Vocational Competence requires developed rational capacities. The march of technology and science in the modern society progressively eliminates the positions open to low level talents. The man able to use only his hands is at a growing disadvantage as compared with the man who can also use his head. Today even the simplest use of hands is coming to require the simultaneous employment of the head.

It is recognised that the defence of the nation is based on two main ingredients — material and manpower. Manpower is usually considered from a broad point of view and is positively related towards health and civic loyalty. Important among the facts is vocational efficiency. The clear implication of this statement is that vocational efficiency of the nation's manpower is a general national responsibility and a specific responsibility of more than one area of education.

The primary purpose of this work is (1) to increase the availability and effectiveness of those aspects of the school's programme

designed to develop vocational competencies and (2) to enrich the general education of children, youth and adults.

A modest effort has been made in this book in touching all aspects of Vocationalisation of Education. It is indeed an indepth study. It is earnestly believed that this work is highly helpful to all those concerned with Vocationalisation of Education.

DR. G. SHIVARUDRAPPA

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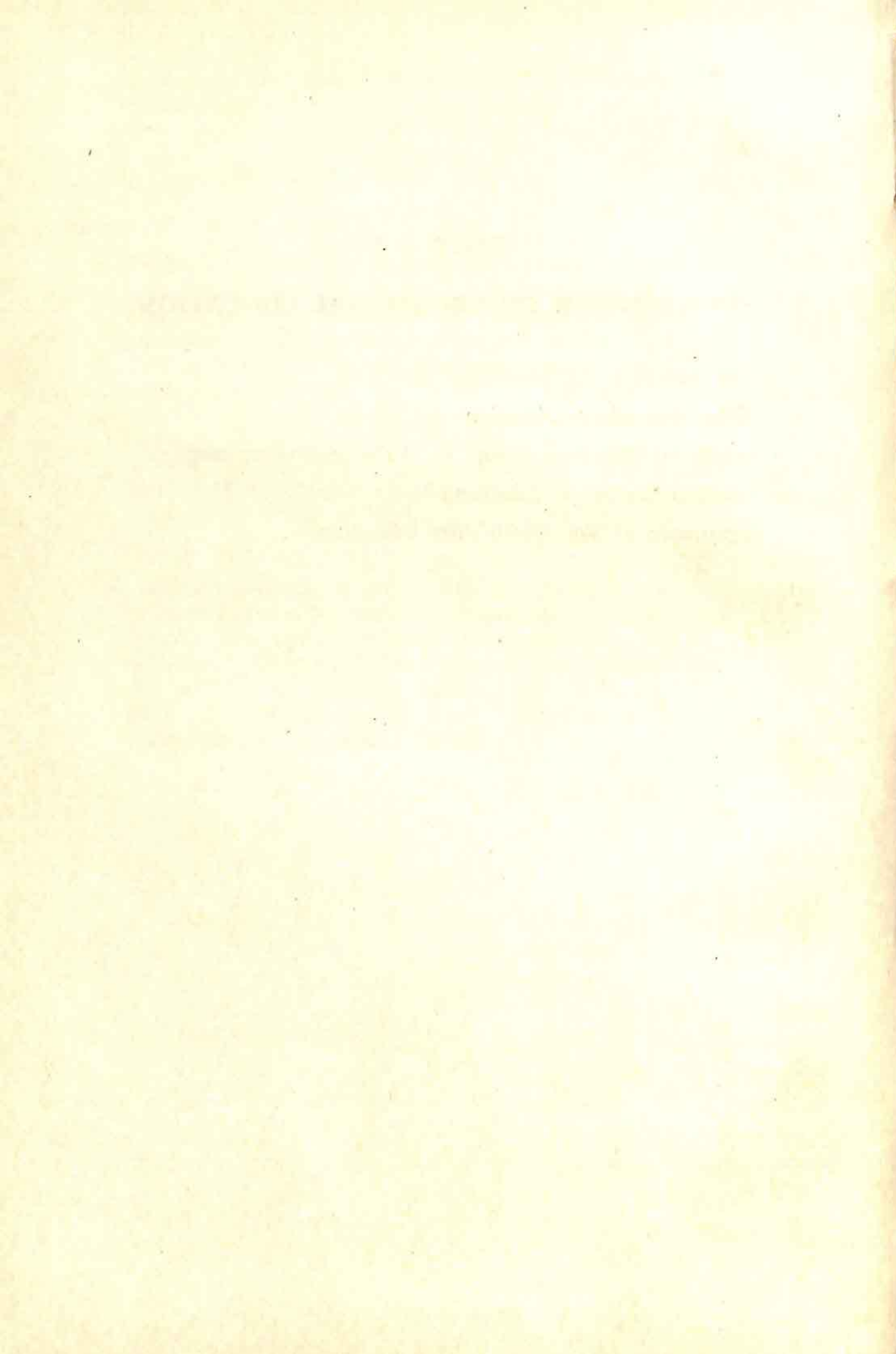
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PART — I

AN OVERVIEW OF VOCATIONAL EDUCATION

- The Rationale for Vocational Education
- Higher Secondary Education
- Vocational Education Stream of Higher Secondary Stage
- Vocationalisation of Education
- Importance of Vocationalisation Education



THE RATIONALE FOR VOCATIONAL EDUCATION

In the progress of the human race, the Vocationalisation of Education of man has been a consistent and identifiable element. Vocationalisation of Education has been part of the foundation of man's creative and progressive development. A central tenet of Vocationalisation of Education is often expressed by the phrase "to fit for useful employment". This implies an economic future for the individual which will be better than what he might have had without Vocationalisation of Education. Economic improvement leads towards a better standard of living for the individual, and in turn for society as a whole. Vocationalisation of Education has, therefore, been thought of as a "wise business investment" both for the nation and for the individual.

The general rationale emphasises also the development and conservation of natural resources, the prevention of waste of human labour and the defence of the nation as other natural products of Vocationalisation of Education.

It is logical to think that Vocationalisation of Education in its broadest sense pertains to all occupations and all people. The Programme of Vocationalisation of Education encompasses the Vocational needs of 85 per cent of the persons who enter and work in the nation's labour force. It must be recognised that a student's gifts may lie in areas other than the academic. Artistic and creative talent must also be sought out and developed.

If the human potential is to be fully exploited in a world where science and technology are opening new dimensions and extending new horizons, it is possible to make full use of this vast potential, if our people are educated properly and if they have the skills, the motivations, spirit of enquiry, so as to be effective partners in this new age in which Science and Technology have become such a massive force in the human affairs.

Vocationalisation of Education is Challenged in Different Ways

First: People look at Vocationalisation of Education with the cold finger of suspicion which implies an unwasted element in the curriculum which could and should be dispensed with.

Second: Studies and reports dealing with the purposes of Education appear to place emphasis upon intellectual, moral, spiritual, and social values. Achievement of these goals is identified clearly as the task of the so-called academic education. In effect, this represents a challenge by omission, something like being dressed to go to a party but not receiving an invitation.

Third: The third challenge to Vocationalisation of Education is generally constructive. It does not question the right of Vocationalisation of Education to exist but places great stress upon related goal, and little upon its particular role. For example, it demands that students in Vocationalisation of Education develop stronger background, in Science, Mathematics, English, and to the general social environment. Vocationalisation of Education may have always sought the attainment of these values. Despite the long history of aristocratic contempt for manual labour, Vocationalisation of Education has held steadfast to their belief in the value of the practical arts, not to the exclusion of other values, but with the point of view that man's contribution to society depends in a large measure upon his practical bent.

The aim of education is to draw out the best in the individual to the best advantage of the society in which he lives. In a free nation, it is the duty of the society to provide equal, if not identical opportunities to all. Schools and colleges must do more than merely preparing students to pass final examinations. The Indian Education Commission has emphasized the need for linking up education with national development and in that context, it had pointed out that there should be work experience followed by vocationalisation in the school system. The linkage of education with community and work has always been weak, because education in the schools had been over-dominated by text-books concerned with various school subjects. The discipline-orientation of the University

system has percolated down to the school system and has introduced bias towards subjects and text-books, the syllabus and the examination. The bookish character of our education was criticised by the Indian Education Commission and it categorically emphasized that unless education was directly linked with productivity, education would remain a scholastic venture not very much concerned with national development. In this context one is reminded of Dewey's warning against an inherent danger of formal education. He fears that in its extreme form it may be divorced from life experience and it may become rigid in its contents.

India is the largest democracy in the world. She has undergone a great deal of transformation under the impact of technological and industrial development. The individual, the family and the society have been subjected to stresses in different directions and are manifesting a number of desirable modifications or adaptations to the changing needs. The educational system, however, remained static for a long time and resisted all reforms to cope with the changing needs of the rapidly growing society.

Various Committees and Commissions on Indian Education have tried to find an answer to the question, what pattern of education would best prepare the Indian Youth for useful, satisfying and gainful occupations on the completion of the Secondary stage. The students who complete the secondary education are in the adolescent stage. Developmental changes do occur during this period. Numerous cross-sectional and longitudinal studies on adolescent students indicate that changes occur in attitudes, interests, values, future plans and aspirations, openness to impulses and emotions, personal integration and intellectual ability. So the school should act as a device by which a limited number of skills, insights and points of view are communicated to the young in the belief that possession of these would somehow aid the individual to become a more skilled worker.

Many adolescent students do not know where to go; they have energy but they are not clear about the destination. The dilemma is not just, "who am I?" but "who am I going to be?", not just "where am I?" but "where am I going?". Development of purpose occurs as these questions are answered

with increasing clarity and conviction in three dimensions; vocational and recreational interests, vocational plans and aspirations and general life style considerations.

The educational goals of the adolescents have been divided into three main areas or families — cognitive, affective and psychomotor: cognitive goals address the development of the students' intellect; affective goals are connected with the students' emotional or social growth; and psychomotor goals are aimed at the acquisition of manipulative movements and skills. Our elementary and secondary schools are primarily oriented towards goals in the cognitive domain only.

The affective domain deals with a student's self-concept, personal growth and emotional development. Teachers who work in this area need skills in helping students diagnose and find solutions to personal and social problems. The psychomotor domain on the other hand is primarily concerned with the development of muscular skills and coordination. This area is concerned with the development of manipulative skills.

The period of adolescence is extremely important in the life of the individual because at this stage one moves from childhood to a stage of maturity when the individual takes active part in life. Hence, it becomes the primary concern of education to give such an education which would develop all the three domains and help them become a well developed personality.

The Indian Education Commission was opposed to the mad rush to the universities. According to the Commission's report, uncontrollable admissions in the universities are responsible for deterioration of the quality of higher education on the one hand and creating of unemployment problems of graduates on the other. The commission, therefore, was categorical in its recommendation that reorganisation of higher secondary education and its vocationalisation are essential if education has to play a positive role in the national development and be an instrument of social change.

Now science and technology have become an essential part of society and culture. India is in transition from a society in which education was the privilege of a small minority, to one in which education has become the privilege of the

masses. The resources needed for this programme can be generated only if education is related to productivity so that an expansion of education leads to an increase in national income. As a result large investment in education became possible. Education and productivity thus constitute a "rising spiral" whose different parts sustain and support one another. The link between education and productivity can be forged through the development of science-based education, introduction of work-experience, vocationalisation of education at the plus two stage and improvement of scientific and technological education. The most distinctive feature of a modern society, in contrast with the traditional one is in its adoption of a science-based technology. It is this which has helped such societies to increase their production so spectacularly. It has other important implications for social and cultural change which can be broadly described as modernisation.

Owing to modernisation the stock of knowledge is far greater than that of the traditional society and the pace of its growth is infinitely quicker. The progress of modernisation is directly related to the pace of educational advance and the one sure way to modernise quickly is to spread education to produce educated and skilled citizens and train an adequate and completed intelligentsia. The Indian society of today is heir to a great culture. Unfortunately, however, it is not an adequately educated society.

Unless our society would become an educated one adequately, modernisation in the real sense is not possible. So far the educated population was less than two per cent. This should be increased to make any significant impact. The composition of the intelligentsia must also be changed; it should consist of able persons, both men and women, drawn from all strata of society. There must also be changes in the skills and fields of specialisation to be cultivated. Till recently it consisted predominantly of the white-collared professions and students of humanities, while the proportion of scientists and technical workers in its rank is quite small. To achieve this, greater emphasis is given to vocational subjects, science education and research.

During the present scientific age, with the expansion of science and technology, science education has become an integral part of school education. Rapid industrialisation and

modernisation of our society has made educational change essential. The objectives are to achieve quick economic growth, to attain egalitarian society and to take the best of the manpower. In order to accelerate the pace of industrial production for quick economic growth, education has made the following main contributions.

Education should train and develop the manpower with technical and industrial skills. It should harness the modern knowledge of science and technology for this purpose. It should inculcate values and attitudes favourable for taking up industrial arts, small-scale trades, small independent vocations, skilled and semi-skilled jobs and technical courses, without considering them in any way inferior to white-collared jobs.

HIGHER SECONDARY EDUCATION

In the post-independent period, there has been marked changes in the educational system in our country. The aim of education has been redefined in accordance with national goals and aspirations. The structure of education is still undergoing modifications, the latest modification being the new pattern of $10 + 2 + 3$. Educational practices both inside and outside the classroom have undergone metamorphosis and the education planners and policy-framers have broken fresh grounds and made revolutionary changes in the system in accordance with the present socio-economic, political and cultural demands of the society. The Indian Education Commission in its report has tried to strike a balance between the inevitable consideration of the existing framework of Indian education and the equally essential desire for innovation and transformation in concomitance, with the exigencies of resurgent India paving rapidly for scientific and technological advancement.

The International Commission on the development of education in the report entitled, 'Learning to Be' has advocated major and fundamental reforms in the following words: "In the present circumstances taking the increased possibilities to future action into account as well as experience already gained, partial reforms will not in general be adequate, even if they are major ones. We must innovate and envisage

fundamental alternatives to the very concepts and structures of education" (Learning To Be 1978, p. 181).

The changes planned in the school curriculum have required reorientation in the courses offered to pupils, the content and objectives of these courses, the presumed goals of the educational process and the link between school and community. The 10 + 2 + 3 pattern and the underlying philosophy of education are expected to provide consistency across the country's schools. The curriculum changes are also intended to have an impact on a national basis and to equip pupils with skills and attitudes which are appropriate to a nation in a stage of change.

The programme that relates education to life and productivity is to give a strong vocational bias to higher secondary education. Hence at the plus two stage the courses are diversified and two streams are introduced — academic and vocational.

The development of the higher secondary stage is governed by the principle of continuity. The higher secondary stage is planned as comprising two broad learning components, which may be termed the general education spectrum and the vocationalised spectrum with many cross-over points during and after this particular stage.

The general education spectrum of the higher secondary school is for general formation of the person and personality through learning centred round languages, socially useful productive work, and a combination of the starting choices of some four natural, social or human science disciplines. Its aim is essentially to prepare the students for university education in the arts or science or professional studies. This is the bridge facet of the plus two stage. This is also the phase of the educational systems in which there is a built-in continuity with the past.

The curriculum for the Ten Year School — A Framework (1975) states, "The characteristic feature of the last two years of school (called higher secondary) is diversification, the aim of which is to avoid forcing the students into the academic channel alone but offer them opportunities to choose subjects and programmes of study in a much wider field of education

in keeping with aptitudes, interests and abilities, with a view to increase their employability". The new system of education also aims at the reduction and elimination of frustration among the youth resulting from non-productive education offered at present. If the diversification at the + 2 stage does not take place effectively, the new system of education would be faced with the problem of having a greatly extended territory of education of academic kind, with consequent expenditure on the one hand and the danger of unemployment, on the other. The academic stream would cater to not more than 50% of the students at the higher secondary level.

VOCATIONAL EDUCATION STREAM OF HIGHER SECONDARY STAGE

Vocational stream is generally terminal. The Vocational stream enables the students to become more employment worthy, when they leave the higher secondary school. Singh (1976) in his article on "Some clarifications on vocation scheme" clarifies that the vocational education would provide ample opportunity to a child to pursue his inclination and still not lose the chance of attending a college. Singh points out that the vocational education at the + 2 stage is to help the student become 'self-employed' ladder, it is also a meaningful terminal stage for those who would not go beyond the plus two and would like either to get gainfully employed or enter self-employment".

This vocationalised learning must be distinguished from technical vocational education imparted to in the Industrial Training Institutes, technical high schools, agricultural or industrial polytechnics where a certain level of skill as craftsman or technician or extension agent is aimed at and attained. Vocationalisation spectrum is referred to embrace in the UNESCO language (1978), "Those aspects of the educational process involving, in addition to general education, the study of technologies and related sciences and the acquisition of practical skills, aptitudes, understanding and knowledge relating to occupations in the various sectors of economic and social life; such an education would be an integral part of general education and a means of preparing for an occupational field and an aspect of continuing education".

The introduction of the vocational education stream at the plus two stage rests on the truth that while general education cannot produce jobs, vocationalised education makes it more likely for an individual to get a job or to be his own master by either starting new productive activity or a service which may satisfy a felt-need of the community. By broadening the educational horizon for the individual, it enables him to reach higher levels of achievement through self-learning.

VOCATIONALISATION OF EDUCATION

Vocationalisation of education at the plus two is the cornerstone of the new system of education. Vocationalisation of education under the new pattern is proposed not only from economic point of view but also from moral and social points of view.

Vocationalisation means training in a particular vocation at the school stage, secondary and higher secondary and this vocational training may be of the terminal stage. In the second sense, vocationalisation means training in some vocation at the higher secondary stage along with general education. This is the most acceptable meaning of vocationalisation. In this connection the Indian Education Commission has observed, "We visualise the future trend of school education to be towards a fruitful mingling of general and vocational education — general education containing some elements of pre-vocational and technical education and vocational education in turn, having an element of general education (1966, p. 9).

Modern India is on the way to industrialisation. As a result the villagers are shifting fast to towns and education is getting an urban orientation. Vocationalisation prepares ground for efficient workers for the fast developing country and on the other hand develops dignity of labour in the students.

In the vocationalisation particularly at the plus two stage, the important aim is to change the educational system from one which was oriented to knowledge for knowledge's sake and clerkdom in a colonial administration to a process which specifically prepares children for a wide range of avenues in

work life. The goal is not that of meeting specific manpower planning needs. It is rather to orientate pupils to a range of work areas in technical, commercial, agricultural, pre-primary teaching, home management, paramedical and other areas and to determine the range in response to local employment needs.

The key concept of the higher secondary stage has become a diversification of pupils' choices in situations of serious unemployment and under-employment of highly educated Indians. There is a need to discourage a proportion of pupils from continuing through higher education when their talents could be better used in the occupation which require technical skills. The dictionary on education defines vocational education as all activities in or out of school designed to contribute to occupational proficiency. It includes apprenticeship, guidance in schools, training programmes, on-the-job training, retraining personnel. Modern definitions include career orientation, specific skill training and eventual job-placement.

According to Byri Shoemaker, "Vocational education helps to give definite purpose and meaning to education by relating it to occupational goals. It provides the technical knowledge and work skills necessary for employment". Vocational education is challenged in terms of developing an appropriate attitude and respect for work.

Schools were regarded as places of academic learning for knowledge and not for training character. This concept is now changed as a result of the introduction of the plus two with vocationalisation of education. Presenting pupils with a curriculum which includes technical, craft and physical skills is intended to broaden their ability and interest in such productive processes. The aim is to develop proper attitudes to work, to inculcate the dignity of labour, banish status and class distinctions and to stress the principles of productivity. The introduction of vocationalisation of education at the plus two stage aims to achieve all these objectives.

THE IMPORTANCE OF VOCATIONALISATION OF EDUCATION

Swami Vivekananda wanted to make education self-supporting in all respects. Economic independence should be

an important aspect of education. For this we favoured agriculture, technical education and physical education to be imparted to students in schools. The vocational education according to Swami Vivekananda is, "Education by which character is formed, strength of mind is increased, the intellect is expanded and by which one can stand on his own legs". To give hope for life to the blossoming students the scheme of vocational education is introduced. In other words India can no longer thrive on a purely theoretical education. There is an urgent need to make education practical and this dream comes true by introducing vocational education at the higher secondary level.

For decades general education had prepared students fit only for college education. It has become customary that those who could not pursue their college education and with low intellectual ability joined the polytechnics or industrial training institutions or similar vocational institutions to earn their livelihood. No attempt was made to integrate the practical education and training. General education denied the students practical training and indirectly encouraged them to seek white-collared jobs. On the other hand, vocationalisation of higher secondary education tries to strengthen general education and make those school-leavers who do not wish to go in for higher education or are not capable of making full use of that education, as a more capable material. It would also broaden the base of general education, for vocationalisation is an integral part of the process of education.

Vocationalisation of education is a major thrust in the reconstruction of present educational system. Vocationalisation primarily aims at equipping the youth with such manual skills founded on basic scientific principles as would be needed in to-day's society and with capacity to adopt to everchanging scientific and technological developments. Vocationalisation is essentially looked from the point of view of the nation's special needs and goals set by the government. It envisages an appropriate blend of training in practical skills for the fulfilment of these goals. Employability is the cornerstone of the new system of vocationalised education.

Vocationalisation is looked upon as an effective instrument to prepare middle level manpower who would not merely be superior to skilled workers but who would work with their

brains as well as their hands. The middle level personnel, the target of vocationalised education, would interact with others to produce new goods and services, which may satisfy a long felt need of the community.

Another important aim of vocationalisation of education is to produce entrepreneurs with special emphasis on agriculture, including agro-based and small and cottage industries. Vocationalisation aims at developing in youngsters entrepreneur skills with which they would become creators of jobs for themselves and also for others.

PART — II

CONCEPTUALISATION OF VOCATIONAL EDUCATION

- The Significance of Work
- Vocations and Avocations
- Concepts of Vocational Education
- The Needs of Youth and Adults
- The Needs of Society
- Vocational Education and General Education
- Utility and Culture in Vocational Education
- Principles of Vocational Education

THE SIGNIFICANCE OF WORK

No force has been more powerful in man's rise from savagery to civilization than work. Work has enabled man to satisfy his ever increasing needs and wants. The savages of early times had few wants and as a consequence spent little time at work. Likewise present-day individuals with few wants spend less time at work than individuals with many wants. Man needs to spend only a small part of a day at work to escape starvation, but he must work the greater part of the day to provide those comforts and necessities that make the difference between the savagery and present-day civilized living. Man discovered early in his history that he did not wish to remain in savagery and that by work he could obtain more palatable food, more comfortable clothing and more suitable shelter. Through the ages the results achieved by work have stimulated man to seek ways of increasing his efficiency at work. Thus man has learned to work.

Individuals have learned to work by various methods. The first learning was perhaps by accident. The discovery of fire, the results obtained from the application of pressure and the saving of energy by the use of the wheel doubtless occurred in this manner. Each of these discoveries contributed materially to man's progress. Man also learned to work by trial and error and by imitation. All these methods of learning are still in use and have been responsible for many advances in civilization. Learning by accident and learning by trial and error have proved costly, and man has been obliged to seek new and less costly methods of learning to work. As a result, the method of learning through planned experiences has come into use. Apprenticeship, which originated during ancient times and flourished during the Middle Ages, was among the first forms of this planned learning. The organized vocational school, which is of relatively recent origin, is a more modern example of planned learning. Educators are constantly seeking

ways of improving methods of learning to work through organized instruction.

Work, which is defined as the continuous application of energy for a purpose, is accomplished by many forces. Water, steam, electricity, gas and chemical reactors are capable of producing work. Individuals also engage in work. From the standpoint of an individual, work consists of exerting physical or mental energy or labour for the accomplishment of a specific purpose or object. When the object is a product or a service for consumer use the work involved is referred to as productive work. Productive work engaged in as the chief means and for the purpose of making a living becomes one's chief gainful pursuit, regular occupation or vocation. As the individual seeks and finds new and improved ways of working he increases his vocational efficiency.

VOCATIONS AND AVOCATIONS

The vocations of individuals are classified into various ways. Workers are frequently referred to as professional men, businessmen, farmers and tradesmen. The differences between these classifications are not well defined and are the result of tradition rather than of differences in salary, education, type of product or nature of service. It is much easier to list the vocations classified as professions than it is to distinguish clearly between a professional worker, a businessman or a tradesman. However, man's vocation does have an important bearing on his status in society. Some vocations lend more prestige to the workers who are engaged in them than do other vocations. These favoured vocations are not necessarily those that provide the highest monetary rewards or require the most extensive educational preparation; nor do these favoured vocations remain the same for each succeeding generation. These difficulties of definition and the changing status of vocations add materially to the difficulty of selecting and preparing for vocations and in improving vocational efficiency.

Vocations are also classified as callings, positions and jobs. These terms also are difficult to define. The term calling is frequently used to denote a ministerial position. It may also be used to denote any vocation in which an individual is

employed who regards his vocation as an end in itself and one from which he receives a high degree of personal satisfaction. The term position is frequently associated with clerical and professional vocations and the term job is usually associated with the trades. Here the dividing line between the two is vague and is determined more by tradition than by definition. A vocation that is dull, uninteresting and commonplace to the worker is sometimes referred to as a job by that particular worker. To another worker the same vocation may be a position or even a calling.

Tradesmen are referred to as craftsmen, skilled workers, semi-skilled workers and unskilled workers. The craftsman who has achieved a high degree of proficiency and recognition in his vocation is a skilled worker. In general, a skilled worker is one who has completed an apprenticeship program in a trade in which technical knowledge and the exercise of judgement are required. An unskilled worker or labourer is one who performs work that chiefly requires muscular energy and very little judgement. Semi-skilled workers are classified somewhere in between these two categories.

Man exerts energy for play as well as for work. The amount of physical or mental energy exerted by an individual may be equally as great for play as for work. The motive for play or recreation is found in the activity itself, and some specific activities are classified as play for one individual and work for another, depending upon the purpose of the activity. Avocations are becoming increasingly important in modern society, and individuals are spending more and more time in avocational experiences. Some of the practical arts are providing learning experiences of an avocational nature.

✓ CONCEPTS OF VOCATIONAL EDUCATION

The world of work presents many problems of concept and definition, most of which arise from tradition and are resolved by common usage. These differences have resulted in various concepts of vocational education. These varying concepts have brought about differences, some of which are fundamental in nature, in programs and practices in vocational education. An examination of some of these concepts will reveal the basic

reasons for certain practices and relationships in vocational education and practical arts.

Some individuals have suggested that vocational education is the education or training of workers. This concept implies that any type of education or training in which a worker participates is vocational education. It doubtless had its origin in early apprenticeship programs in which all educational activities, both general and vocational, were under the supervision of the master craftsman and were included in the apprenticeship program. Individuals who hold this concept are inclined to be critical of preemployment courses and to suggest that the cost of vocational education should be paid by industry and business.

Another concept held by some individuals is that vocational education is education for manual work, which suggests that vocational education is not concerned with work involving mental activity. This concept had its origin in the nineteenth century school for underprivileged children and has resulted in the present-day practice of placing mentally and socially handicapped students in vocational courses without regard to the learner's interest or ability. The concept that practical art is vocational education emphasizes the importance of the idea of the transfer of training by suggesting that one or two basic courses will provide the needed competencies in vocational education. This point of view had its origin in the manual training movement which some individuals suggested was a feasible way of teaching vocational competencies. This point of view has resulted in the designation of industrial arts courses by some individuals as vocational education.

Another concept is that of education for production, in which vocational education is contrasted with liberal education. Vocational education is designed to make a person an efficient producer, and liberal education is designed to make a person an efficient consumer. Other concepts of vocational education involve the use of such words as utility and practicality in which vocational education is confined within narrow limits to subject matter looked upon with less favour than that of a cultural nature. Then, too, there are those who declare that no distinction between vocational and general education should be made, and, as a consequence, no special

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programs of public education should be maintained for vocational education.

Most vocational educators suggest that the distinction between vocational and general education is based on purpose. If a learner engages in the study of subject matter or other activities for the purpose of increasing his vocational efficiency, he is engaged in vocational education. Similarly, if the content of a course or curriculum is designed for the purpose of enabling the learner to increase his vocational efficiency, such content is classified as vocational. One characteristic of these interpretations is that both the purpose of the learner and the content of the course can be classified as socially useful.

This concept suggests that a specified course or curriculum may be vocational to one individual and non-vocational to another enrolled in the same course, depending upon the purpose for which each is enrolled. This concept implies that a person, to be properly enrolled in vocational education, should have made a choice of a socially useful vocation and be making a conscious effort to prepare for or improve in the vocation of his choice. This means that vocational education does not become a part of the educational program of an individual until he makes a decision to prepare for or upgrade himself in his chosen vocation. Vocational education is not designed to take the place of general or non-volitional education but to supplement it. It is not limited to specific subjects or activities, nor is it confined to training for manual dexterity. It has both cultural and utility values and includes the knowledge, skills and attitudes that fit an individual for entering or progressing in a socially useful vocation.

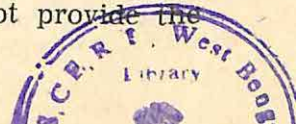
THE NEEDS OF YOUTH AND ADULTS

The success of the nation's economy depends in no small part on the proficiency of the nation's workers. These workers have used various means to acquire proficiency. In times past, proficiency was acquired either by the pickup method or by apprenticeship. The pickup method through the years has proved costly and inadequate, and the apprenticeship system is applicable only to a limited number of occupations and workers. These two methods alone will not provide the

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number of workers and the quality of workmanship required of the present-day labour force. For this reason, it has been necessary to find other devices and systems for maintaining an efficient labour force. Programs of vocational education have been established to meet this need for education and training.

Differences exist in the competencies expected of workers in different occupations and in the characteristics of workers themselves. This occasions a need for different kinds of vocational programs. Programs are needed for the group of young people attending the fulltime secondary school. These youth are generally from fifteen to eighteen years of ages. The vocational courses designed for a youth who will end his full-time schooling at the secondary school level should provide this individual with knowledge, skills and attitudes that will enable him to enter an occupation and plan and carry out the additional training required for advancement.

Programs of vocational education are needed for youth and adults attending a post-secondary school, such as a junior college or technical institute, where they may secure education or training for the more highly skilled trades and technical positions. A third type of vocational training is needed for the group of young people who have left the full-time school for their first regular employment. These youth, as a rule, are between the ages of sixteen and twenty-five. Many of them leave school to take positions requiring limited knowledge and skill. Frequently, these positions are of a temporary nature, and the youth in time find themselves unemployed because of limited training. These persons require a training program that will permit them to spend part time in school and the remaining time in remunerative work for self-support.

A fourth major group in need of vocational training is composed of older adults who have been employed for a number of years. Many of these workers find themselves in need of training due to technological changes in industry or to new discoveries and inventions in agriculture. Unless the training is provided, these persons may become unemployed because of their inability to meet the need for trained workers on a competitive basis. Programs of vocational education and reha-

bilitation are needed for workers who have become mentally or physically handicapped. These workers, because of their handicaps, are no longer able to follow their usual occupations and must be retrained for positions in keeping with their disabilities.

THE NEEDS OF SOCIETY

Society recognizes the fact that every citizen should be equipped to contribute effectively to the welfare of the group. The highest possible welfare is achieved only when each individual produces to the limits of his maximum capacity. For this reason, the necessity for equipping each person for some occupation is a fact that even the most primitive society has recognized. Society has recognized that youth and adults need not only vocational competencies but also general abilities. Both general and vocational education would accomplish the following:

1. Equip the youth to enter an occupation suited to his abilities and offering reasonable opportunity for personal growth and social usefulness.
2. Prepare him to assume the full responsibilities of citizenship.
3. Give him a fair chance to exercise his right to the pursuit of happiness.
4. Stimulate intellectual curiosity, engender satisfaction in intellectual achievement, and cultivate the ability to think rationally.
5. Help him to develop an appreciation of the ethical values which undergird all life in a democratic society.

It is recognized that the education of workers is becoming more important and at the same time more difficult in a social order characterized by the highly mechanized processes of present-day industry. Consequently society cannot leave to the chance interests of individuals or corporations the provision of this training that is so vital to the general welfare. It seems appropriate, therefore, to assign this responsibility to some agency or institution qualified to provide this instruction, and accordingly this task has been assigned to the school.

VOCATIONAL EDUCATION AND GENERAL EDUCATION

The relationship of vocational education and general education has occasioned differences of opinion among individuals, more especially educators, since the beginning of the present century. Some school administrators and others in general education have insisted that vocational education is a subject matter of general education and has the same relationship to general education as do other fields of study, such as social science or mathematics. Teachers, administrators and other personnel employed in vocational education take the position that vocational education and general education are major divisions of the total education program, and one of these divisions does not necessarily include the other. Each of the divisions is of equal importance, and both are necessary in the education of workers.

Some of this difference in point of view is due to definition. Ordinarily, the term general education has reference to the knowledge, skills and attitudes needed by all persons for successful living, without reference or application to particular vocations. Frequently, words and phrases such as cultural, liberal, academic and non-vocational are used to refer to this same kind of education. The term general education is sometimes used to mean the total education program, which suggests that it includes both vocational and other types of educational programs. Differences in point of view may, therefore, resolve themselves into differences in definition.

For the most part, however, different concepts of the relationship of general and vocational education are due to differences in educational philosophy. Some educators contend that a general or fundamental course is the best preparation for a vocation. These educators suggest that courses such as industrial arts, domestic science, general agriculture and general business provide appropriate training for both vocational and general education needs and are included in the category of general education subjects. Vocational educators agree that these subjects are in the area of non-vocational practical arts and are useful as such. However, vocational educators insist that they do not provide education for the specific competencies needed in preparing for or pro-

gressing in a vocation. These educators contend that other courses of a specific nature as well as those of a general nature are needed in the education of workers.

Vocational education and general education are major divisions of the total education program. Each of these divisions is of equal importance and is necessary in the education of workers. This point of view suggests that programs of vocational education should be organized to meet vocational needs and that standards established by vocational educators should be maintained in the organization and operation of the vocational education program. This concept also recognizes that vocational education and general education have much to contribute to each other and to the total education program and that both vocational and general educators should strive to achieve the proper coordination of these aspects of education in the total education program.

UTILITY AND CULTURE IN VOCATIONAL EDUCATION

The classification of the content of education into the categories vocational and general has led some individuals to suggest that vocational education is associated with utility and general education with culture. Two alternatives are prevalent among those who accept this point of view. One suggests that the two terms culture and utility are not antagonistic but that they have nothing in common. The other point of view is that the two terms are antagonistic, and unless vocational courses are severely restricted, culture will perish.

Individuals who hold to the theory that utility and culture are not antagonistic suggest that the curriculum should consist of a proper balance between vocational and general education, and this balance may be achieved by the selection of certain subjects, some of which are narrowly utilitarian and some of which are broadly cultural. The proper balance of these two will contribute to the development of a well-rounded individual. The contention is made that placement of subject matter in a program of studies affects its cultural or utility values. For example, courses in the arts and science division of a college are cultural, but those in the agricultural

division are utilitarian. Similarly, the pure sciences are cultural, while the applied sciences are utilitarian or vocational. Those who believe that culture and utility are definitely antagonistic usually classify the language and traditions of the Golden Age and the Renaissance, together with a few other subjects, as cultural subjects.

A more acceptable point of view to many individuals, especially those in vocational education, is that the standards of culture are not wholly derived from the traditions of the past, nor are they due to convention and to conformity. Culture is a process of valuing life and living it according to the values set upon it. The cultured man finds truth and beauty in many activities, and these activities are not static but relative and changing. The sculptor and the painter find truth and beauty in the works of the masters, but they may also find it in their own work, whether it be for pleasure or for profit. The farmer finds truth and beauty in the fields of grain and herds of cattle. Culture is more of an attitude than a product or a symbol or possession. It is not identified with specialized content or activity but may be acquired through many types of activities and pursuits, both of a general and of a vocational nature.

PRINCIPLES OF VOCATIONAL EDUCATION

A principle is defined as a fundamental consideration or basic rule which serves as a means of evaluating present practices or as a guide to future action. When established, principles constitute areas of general agreement among individuals qualified in the field with which the principles are concerned. Principles of vocational education are derived from past experiences and judgements that have proved to be satisfactory and efficient.

ORGANIZATION

Principles grouped under Organization are concerned with definitions, functions, needs and procedures. They may be used for the purpose of assisting in arriving at decisions concerning the advisability of establishing programs of vocational education. These principles may also constitute an effective means of evaluating the purposes and scope of existing pro-

grams, and they may be useful in locating some shortcomings, if such exist, in the organization of the vocational education programs.

- (1) **The function of vocational education is to prepare persons for and enable them to progress in a socially useful occupation**

This principle suggests that vocational education is distinguished from other education by the purpose of the learner. If the learner participates in a course of instruction for the purpose of preparing for or progressing in an occupation, he is participating in vocational education. This interpretation suggests that vocational education cannot be defined by designating certain subjects as vocational subjects and others as non-vocational ones. Any subject, if studied by a learner for the purpose indicated above, becomes a vocational subject to that particular learner.

Some courses of study or school subjects are designed solely for students who have selected a vocation and are either preparing for it or are attempting to progress in it. These courses are designated as vocational courses. Secondary school courses of this nature usually include extensive activities and skills of a practical nature needed in the vocation. These courses frequently attract students who have not made a choice of an occupation. Since the course or subject is not designed for these students, they should not be permitted to enroll in it but should be encouraged to continue their general education until they have made a choice of an occupation.

- (2) **Vocational education is a part of the total educational program**

Vocational educators recognize that vocational education is not a substitute for general education but is a component part of the total educational program of those persons who have selected an occupation and who desire to prepare for it or progress in it. Both general education and vocational education have their useful functions, and these are related. A meagre general education will not prepare a person for living and enjoying life any more than meagre vocational

education will prepare him for success in his chosen occupation. This means that each individual should achieve some degree of balance between vocational and general education, in general devoting his early educational life to general education.

In view of the fact that many individuals terminate their formal education at the time of graduation from high school, it is apparent that if they are to acquire any preservice vocational education they must get it during their high school career. Here again unless the individual has made a choice of his occupation he should not enroll in a course designed to prepare persons for a specific occupation but rather should continue his general education until such time as he makes occupational choice. This may mean that he will be obliged to delay vocational education until he enters an occupation and desires to progress in it. Post-high school vocational education courses are provided in some communities to enable students to complete high school before making a choice and preparing for entry into an occupation.

(3) The need for vocational education in a specific area should be determined from the results of a community survey

Vocational education is based on individual and community needs, and some means of determining these needs must be used. A device frequently used for making these determinations is the community survey. The survey may be used to determine the nature and scope of vocational education needed, the subject matter required to meet these needs, the materials and processes that should be used and the facilities and equipment that should be provided. The survey may also reveal the qualification that students who are preparing for the occupations should possess and the opportunities that each occupation offers for employment and advancement. Surveys also reveal to community agencies the possibilities and limitations for new enterprises in the community. Some of the more common techniques to use in making a survey include interviews, questionnaires, comparisons, rating scales and score cards, statistical techniques, judgements of experts and research. Provision should be made for checking each technique used to avoid errors of omission or commission.

The survey report should contain suggestions for interpretation and implementation, which may involve further study. Helpful suggestions may be obtained from a well-selected advisory committee to serve in such functions as advising upon objectives, policies and procedures and for reviewing and interpreting the results of the survey. Qualified personnel are needed in planning, conducting and interpreting the survey to be assured that proper data are obtained and proper interpretations made so that the school authorities may establish vocational progress based on community and individual needs.

(4) Vocational education is needed to insure an adequate and efficient labour supply

The experiences of the nation in World War II demonstrated rather vividly the need for an adequate and efficient labour supply. There is general agreement that the national program of vocational education enabled this nation to convert from a peacetime to a wartime economy in a relatively short time. The vocational organization and facilities which had become well established as a result of many years of experience were quickly and easily adapted to war needs by the provision of additional personnel and facilities to supplement those of the regular program. Trained personnel were available as rapidly as industrial facilities were completed as a result of the long-time vocational education program.

An adequate and efficient labour supply is as necessary in peace as in war. The many and continuous technological changes that are designed to increase the efficiency of modern industry and business require an ever-changing programme of vocational education to meet these needs. Employed workers who are faced with a need for additional skill and information as a result of technological changes may find opportunities for acquiring these needs in vocational part-time and evening classes. The fact that these opportunities are present lends a feeling of security to the worker and makes him a better citizen. The use of the opportunities reduces the time required for learning the new techniques and consequently lessens the period of time he operates at less than normal efficiency.

(5) Practical arts courses are designed for general culture rather than vocational efficiency

Practical arts courses in general agriculture, general business, general home making and industrial arts are designed for such purposes as: (1) providing recreational and a vocational interest and skill, (2) supplying knowledge and skill needed by the consumer, (3) satisfying the students' desires for manual activity and (4) contributing to intelligent vocational choices. During the first years of the present century, some educators suggested that a general course such as industrial arts would provide the vocational education needed in a trade or an industry.

Some educators at present are suggesting that a practical arts course, more particularly industrial arts because of its general nature, is more feasible for preemployment training than a vocational industrial education course. This position is taken because of the multiplicity of occupations or trades and the difficulties and expenses of providing specific training in each of them. However, regardless of difficulty and expense, industrial arts is not a substitute for vocational industrial education, and this fact should be recognized. A school should have both industrial arts and vocational industrial education courses, the former for all students at various grade levels for the purposes indicated and the latter for those students who have selected a trade or occupation and who desire to prepare for work in the occupation selected. If school funds will not permit the operation of both programs, then the school authority should determine which of the two best meets the needs of the community, and it should be made clear that one is not a substitute for the other.

(6) Occupational information and guidance should be provided for vocational students

Reference has been made to the fact that vocational education is designed for persons who have selected an occupation or gainful pursuit. Studies have shown that many individuals complete high school and even college before such a decision is made. Then, too, some individuals find that they have made an unwise or distasteful choice of an occupation, and, if they do not change, they are dissatisfied throughout their working lives. These facts point out the need for vocational

guidance and counselling not only before the occupational choice is made but also during the period of preparation and throughout the early years of employment. Guidance and counselling contribute to an individual's wellbeing, and society in general benefits when individuals are properly placed.

A functioning vocational guidance program will supply an individual with an inventory of these abilities, aptitudes and interests as they relate to occupations in which he is interested. The guidance service will supply the individual with information about the requirements of various occupations and will assist the individual in the process of matching his qualifications with the requirements of occupations available to him. The vocational counsellor will also assist the individual to secure a position and will continue to counsel with him concerning problems of adjustment, promotion and retirement.

Vocational guidance and vocational education are two separate movements, distinct in organization and purpose but rather closely related. Both guidance and vocational education are needed by every individual. They operate continuously throughout the individual's career, with guidance pointing out the need for vocational training, retraining or adjustment and serving to prevent errors that may prove costly both to the individual and to society in the selection of occupations and educational procedures.

(7) Local initiative is essential for success in vocational education

The essential elements of a vocational education program have their origin in the local community. The needs to be met, the individuals to be served and the facilities to be used are local in origin. Vocational education functions best and is more likely to succeed when local rather than state or national interests are responsible for starting the program. This local interest may be generated in local organizations or agencies or by individual citizens who recognize a need and an opportunity. An approved procedure is for the interested agencies and individuals to create a community consciousness of the need. This in turn will stimulate local school superintendents and local school boards to investigate the need and plan a program of action. The state and central units may be called upon to provide some form of

leadership and assistance in planning and executing the action program.

Local initiative and support are as essential for an established and going program of vocational education as for one in the initial or planning stage. Local industry, business, agriculture and labour are in a position to know local needs and requirements and consequently may provide advice and counsel to vocational educators on programs, facilities and personnel. Vocational educators need to keep local people informed on accomplishments, procedures and needs. Local advisory committees are useful in maintaining community contacts.

It is not always feasible to provide all needed vocational services in the local community, and frequently the country or state is requested to provide some of these services. For example, in some vocational fields state education departments frequently employ itinerant instructors who go from place to place and teach courses for employed workers. The state unit is responsible for making known to local communities that this service is available, but here again local initiative should assume responsibility for determining the need for the course and for assisting in organizing finance for it.

(8) Vocational education programs should be based on continuous research

A satisfactory research program should recognise three kinds of research activities. The first is concerned with planning new programs or the expansion of present programs. Various kinds of data are needed for this planning, including data concerned with kinds of occupations and manpower requirements in the state and area served, the probable number of enrollees and the possibilities of securing staff facilities and equipment. The research program should contemplate the means and method of interpreting these data.

The research program should include some activities concerned with the appraisal of programs of vocational education presently in operation. Some devices such as score cards, rating sheets or evaluation techniques should be developed and applied to these programs to determine the extent to which they meet the objectives established for them. A research

agency or staff, separate from the teaching or supervisory staff, is usually in a better position to make these evaluations because persons closely associated with a program are often unable to arrive at objective evaluations.

A third kind of research of importance in vocational education is that carried on for the purpose of discovering better ways of carrying out present educational practices and developing new ideas for new practices. This type of research requires the use of judgements of competent persons who are working in the field of vocational teaching. Frequently these persons must do this type of research as extra work for which the only pay they receive is recognition for their efforts. Effective research of this type requires cooperative effort, and the state research service may provide the leadership and stimulation necessary for this developmental research.

(9) Vocational education personnel should be occupationally competent

State plans for vocational education specify that personnel in vocational education must possess extended occupational experience in the fields in which they are working. This occupational experience is needed to enable the teacher or staff member to acquire competency in his occupation. Occupational competency is necessary in vocational education because of the nature of the task and the individuals taught. Much of vocational education is devoted to the upgrading and retraining of employed workers. The student worker quickly loses respect for and confidence in the teacher who is inept at the trade or occupation. The vocational teacher must know the problems of the worker and the difficulties he will encounter. Such knowledge may be acquired through experience.

It is recognized that some workers do not acquire competency even with extended experience. This suggests that some means of determining the competency of prospective teachers must be found. In some occupations, such as agriculture and homemaking, experience coupled with technical knowledge acquired on the college level is considered a measure of competency. Prospective teachers in these and some other occupations may acquire experience during the period

of time they are enrolled in preservice teacher education courses. These students may work at their occupations between college terms. All these and other means are used to enable prospective teachers to acquire competency and learn the language of the trade or occupation.

(10) Vocational education personnel should be professionally qualified

The term professional qualifications is used in educational literature to refer to courses and experiences concerned with the principles and practices of teaching. Professional education is as essential for vocational teachers as it is for teachers in general education. The teaching content in vocational education varies from area to area and from time to time. Constantly changing conditions require changes in content and emphasis. Vocational teachers use job instruction sheets, evaluation techniques, course calendars, longtime programs and other devices that require skill in their construction. Vocational teachers have expensive equipment that must be used by many students. Plans are needed for class and shop organization, purchase of supplies and handling of small tools. Vocational teachers make local trips, home visits and visits to local industry. They are also responsible for planning the work of student organizations in vocational education. All these are in the province of professional education.

(11) Programs of vocational education should be operated efficiently

The efficient operation of a vocational program requires that value received be obtained for the funds expended. The determination of value received is no easy task. However, a number of factors are usually associated with efficiency of instruction. For example, qualified instructors are more likely to provide efficient instruction than those not qualified. Efficient instruction requires adequate space, equipment similar to that used in business and industry, sufficient supplies of the kind and quality needed and properly selected library materials and laboratory and visual-aid equipment. The presence of all these does not guarantee efficient instruction but contributes to it.

INSTRUCTION

Materials and methods of instruction in vocational education differ from those in general education, due to such factors as the interests and purposes of the learner, the demands of the industry or business enterprise, the standards of achievement and performance and the technological changes that are constantly occurring in the economic order. The observance of some principles of instruction will enable the teacher to better serve the needs of individuals in a class in vocational education. Some important principles of this nature are indicated below.

(12) Vocational instruction should be established and maintained on the basis of occupational needs

The content of vocational education should consist of the knowledge, skills and attitudes that the trainee will need to perform efficiently the job for which he is being educated. This means that the vocational educator must be familiar with what the worker does and what he must know. This information may be obtained from an occupational or job analysis — a technique developed by vocational educators under the direction of the federal Board for Vocational Education. Job analysis identifies the nature and degree of skill needed on a specific job or type of work and also the related technical content, such as science, mathematics and drawing, which applies to the job.

A job analysis should not be confused with a job description or job specification. A job analysis is a classified list or inventory of the learning units of a trade or occupation. The principal steps in making a job analysis consist of (1) making a list of the things a man must know and do in his trade or occupation, (2) listing specific directions for the performance of each of the above items, (3) preparing a list of topics concerning the information needed to carry out the directions on how to perform the job analysed and (4) making a list of related science or mathematics topics that will provide the information needed to master the topics listed under item 3 above. The use of the job analysis technique gives information and direction based on the specific needs of the occupation for which the trainee is preparing.

- (13) Vocational instruction should be available for those who need, want and can profit by it.

A common misconception that has prevailed in pre-service education for vocations is that certain individuals, who are not able to learn certain types of subject matter commonly associated with mental discipline, should be encouraged to pursue courses involving manual dexterity. Since most vocational courses, more especially those of less than college grade, include many activities of this nature, there is a tendency to associate vocational courses with those designed for dull students. Many students, when motivated by a desire to prepare for a chosen occupation, perform in class much better than students who are not so motivated — not necessarily because of superior or inferior mental capacity but because of a felt need which generates a motive.

There are some students, and for that matter some employees, who are limited in their capacity to learn and consequently can profit little from any course, whether it be one designated as vocational or one commonly designated as non-vocational. Techniques such as guidance and counselling are used to discover these shortcomings. No student should be encouraged to pursue a vocational program of studies regardless of his wants if it is evident that he cannot succeed because of deficiencies, whether they be mental, physical or social. Experience has demonstrated that, other things being equal, superior students perform better than inferior students, and superior students who make a choice of an occupation should be encouraged to prepare for that occupation.

- (14) Conditions under which vocational instruction is given should compare favourably with desirable conditions in the occupation concerned

Conditions, as used in this principle, refer to such items as supplies and equipment used in instruction; the arrangement of the shop, laboratory or classroom, the scope and sequence of the job; the organization for teaching; and the means of evaluation. Inadequate and poorly utilized space and poorly selected equipment in a school may make it difficult if not impossible, for learners to achieve the speed and accuracy required by industry, agriculture and business. Then, too, the use of poorly adapted equipment may discourage the learner

who recognizes the need for maintaining high standards but finds himself unable to do so because of conditions that do not compare favourably with the work-a-day world.

In some cases, sufficient time is not available for laboratory and field work, and the quality of the work suffers as a result of attempting to complete a job or unit of work in too little time. The organization of the school for work should, in so far as possible, resemble the organization in agriculture, industry and business. Learners should work under a foreman or supervisor and should be responsible for planning the layout, for the care and upkeep of equipment and tools, and for the observance of safety rules and practices. In so far as it is possible, learners should acquire attitudes, such as pride in work, a desire to increase one's efficiency and a sense of social responsibility, such as a good workman possesses. Devices and activities commonly used in the occupation should also be used in the teaching program. Such activities and devices as sales meetings, inspirational talks, quotas, competitive practices, employee organizations, cooperative activities and visual aids have a place in the instructional program as ways and means of duplicating conditions in the industry concerned.

(15) Real jobs provide the best laboratory for vocational education

Vocational education is best given through jobs that are real and essential. The use in vocational education of equipment and practices found in industry and business encourages the performance of real jobs. This practice carries out the slogan of vocational education, "We learn by doing". Real jobs present a challenge to the learner that cannot be provided in developing knowledge, skills or attitudes through the use of practices or exercises.

Vocational educators recognize that it is more difficult to provide real jobs for all-day trade courses in some trades than in others. For example, it is more difficult to provide real jobs in carpentry than in printing, auto mechanics and pattern making. This suggests that unless these difficulties can be overcome it is probably desirable to teach only those trades and occupations in which real jobs for learners can be provided.

Real jobs are essential in preemployment education in agriculture and homemaking. This means that the supervised farming program should be sufficient in scope to justify the time and effort of the learner, and the nature of the program should be such that it has the possibilities of growing into a full-time farming program when the trainee has completed his vocational course. Likewise the home projects of the girls in homemaking should consist of such jobs and activities as are real and essential to successful homemaking.

(16) The standards in vocational education should be as high or higher than the accepted standards in the occupation concerned

A standard is a device or technique for evaluating the output of the learner. This evaluation in vocational education is made in terms of what industry, agriculture or business expects of its workers. The world of work expects its workers to turn out a saleable product that will be purchased by the consumer or user. When a worker is employed or engages in self-employment his worth is determined by the saleability of his product, whether it be goods or services. Since vocational education has for its purpose the education of individuals for work, it is important that standards in education be as high or higher than those accepted as desirable in the world of work. This means that the output of the school shop or laboratory should match that of workers in agriculture, business, homemaking and industry in quality and in speed and that the personal characteristics of students, such as appearance, honesty, fair-mindedness and loyalty, should be up to the standards expected of superior workers in the occupation concerned.

Industry, agriculture and business have various ways of evaluating their products and services, and many of these same devices and techniques may be used in vocational education. A rule or caliper may be applied to a product in the shop, a score card or rating sheet to the performance of a service, a written or oral test to some activities involving a knowledge of subject matter, and the judgement of a qualified person may be used when objective measures are not available. The application of this principle or standard makes it necessary

that the person responsible for the evaluation, which in most cases is the teacher, should know what standards are acceptable in the occupation and what devices should be used in making evaluations. This again illustrates the importance of a teacher's having both professional preparation and skill in his occupation in order that standards of performance may be maintained at a level acceptable to the trade or occupation.

(17) Vocational education programs should include both short, intensive courses and long-term courses

Vocational education should be available for all persons who need, want and can profit from it. Many persons who are in this category are employed and unable to attend full-time school because of the necessity for making a living. This means that these persons have a limited time available for attending vocational classes. In order to make the best use of time, it is necessary to organize short, intensive courses at a time convenient to these workers. The content of these courses must be directly concerned with the important problems of the occupation, and little time is available for material or activities indirectly related to the occupation. Frequently, these short courses are organized around single units or jobs for as little as ten hours of instruction. A coordinated series of these courses in one community will enable an individual to acquire a great deal of information over a period of time.

Courses of longer duration should be available in vocational education for preemployment and retraining. Some cooperative courses of long time duration should be available for employed workers who are seeking advancement. These courses offer opportunities for the study of related material, and time is frequently available for the study of subjects for recreation, personal satisfaction and other non-vocational purposes. Since courses of longer duration require more time, equipment and money, there is a special need for the exercise of judgement in establishing them. Some factors to consider in making this determination are: (1) the degree to which a need exists; (2) the availability of qualified teachers, adequate space and proper equipment; (3) the probability of securing employment when the trainees have finished the course.

(18) Instructional programs in vocational education should be characterised by flexibility

Flexible programs are easily changed to meet changing conditions. This means that a minimum of restrictions should be placed on local school authorities and vocational teachers in making such decisions as kinds of vocational education to establish in the community, the types of schools and classes, the lengths of the courses, the materials and methods of instruction and the means of evaluating the programs. Any restrictions on the above items should be imposed only for the purpose of assuring that high standards are maintained and that value received is obtained from expenditures for vocational education.

(19) Vocational survey should be undertaken to determine the type of training suited to the specific needs of the community

More and more technical information is needed in socially useful occupations. Recent studies have shown that there is a growing need for workers who possess less operative skill and more technical knowledge than tradesmen. Such positions as are concerned with testing and production, planning and control and supervision of plant operation and maintenance are included in these technical occupations. There are at present relatively few programs of a vocational technical nature, and many more are needed for preemployment, retraining and for advancement in an occupation. The specific needs of a community for this type of training may be determined by a vocational survey.

Much of the vocational technical training may be given at the post-high school level, and special vocational technical institutes and junior colleges designed to offer terminal courses are institutions especially adapted to this type of vocational program. The technical institute caters principally to persons who have selected their occupation and who desire intensive preparation for this occupation. Because of the intensive nature of its offerings, the technical institute provides courses of shorter duration than those of the professional colleges. These short, intensive courses are terminal rather than college preparatory. In view of the increasing importance of vocational technical education, the general public should give

more attention to this need, especially to the desirability of using public funds to finance programs of vocational technical education.

(20) Vocational instruction should include information and activities designed to protect and conserve human life

Current literature is replete with statistical evidence showing the extent of loss, both in manpower and in money, due to accidents and sickness. There are many agencies, both private and governmental, that are working to prevent sickness and accidents in industry and business. It is especially important that vocational students be taught to work safely. Since many of the accidents are due to the improper use of machinery, special emphasis should be placed on safety practices while students are learning to operate machines. This applies not only to the operation of industrial machinery, but also to the operations of machines that are used in the home and on the farm. Accidents in the home and on the farm can be reduced by proper instruction in safe working practices.

Some vocational teachers make a practice of appointing students. Such a student has the responsibility for checking clothing, aprons, goggles, guards, belts, tools, heat and power outlets and other items that may become hazards. Sometimes, such duties are left to a committee of two or more students, and this responsibility is rotated among class members. While it is a good practice to develop resourcefulness in students, it is doubtful if full responsibility for safety education should be delegated to them. Certainly the instructor should at all times be aware of the classroom practices that students in his classes observe.

Visual aids are used to teach safety in classrooms and homes. Posters, films, slides and models are used to supplement safety instruction in vocational education. These devices in general should show safe practices rather than unsafe practices and their results. Accidents sometimes occur because material is not properly stored, floor space not properly cleaned, machinery and equipment improperly placed and facilities improperly lighted. The ultimate aim of safety education is the development of safety concepts that will serve to conserve human life.

PART — III

MEANING OF VOCATION AND VOCATIONAL EDUCATION

- The Significance of Vocations
- Vocation and the Individual
- The Selective Quality of Vocations
- Educative Values of Vocations
- Vocations as Means of Service
- Vocations and Economic Progress
- Vocations Classified
- Characteristics of Vocations

THE SIGNIFICANCE OF VOCATIONS

Among the basic institutions of civilized society one of the most significant is vocation. Upon the continuing success of this institution depends the existence of all the others. The home, the state, the church, the school, and the courts of justice are all supported by the vocations of the people. If the population of a community, or of a nation, is improperly distributed among the essential vocations, every aspect of community or national life suffers. Furthermore, where progress of the vocations is retarded, all other social institutions are found to be unprogressive, and all human life remains on a low level. Hence it is important that every generation looks well to the proper development of vocations and that the institution of vocation be generally regarded as basic and of major concern to society.

What, then, is one's vocation? The definition accepted determines in large measure one's general attitude towards a number of economic and social problems and particularly toward the problem of vocational education. If one holds that "a vocation means nothing but such a direction of life activities as renders them perceptibly significant to a person, because of the consequences they accomplish, and also useful to his associates",¹ one will have a conception of the meaning and proper function of vocational education quite different from that of one who regards vocation as one's "chief calling", "regular occupation", "chief gainful pursuit", or "special means of making a livelihood".

The former definition includes practically all those human activities that are colored by, or even remotely related to, the means of "making a living", while the latter includes only those activities directly involved in the specific practices of one's "chief calling". The difference is significant. In one

1. *Dewey, John*, "Democracy and Education", p. 358, The Macmillan Company, New York, 1921.

case, the education and training required for successful participation in organized social life is regarded as a single process, no distinction being made between those educative experiences which contribute chiefly or wholly to preparation for "making a living", and those for "making a life". In the other case, there is well-defined dualism of purpose and effort in the preparation or education of the individual. In this book, vocation will be regarded as "chief calling", "chief gainful pursuit", "regular occupation", etc., though its interrelation with all the other activities of one's life will in no way be disregarded.

VOCATION AND THE INDIVIDUAL

That one's chief gainful pursuit affects the whole of one's existence cannot be questioned. But vocations differ greatly in the quality of giving colour to one's whole life. A doctor, outside of office hours, cannot be only a citizen, a church member, a father, or a school trustee; he is a doctor twenty-four hours of the day. His points of view, his habits of life, even his manner of speech are determined, in large measure, by his vocation. The same may be said of the minister, the teacher, and the politician. The barber, the plumber, the dry-goods salesman, and the grocery merchant are able to a much greater degree to divert themselves from their vocations when the day's work is finished, but even then they are not entirely free from the influence of their occupations. Clearly no one can completely escape from his vocation at any time, but the extent to which vocations vary in permeating power constitutes one of the important differences among them.

Not only do callings permeate the total life of those following them, but they determine, in large measure, one's social status, for they vary greatly in prestige. This, in a democracy, is a most striking phenomenon. Some vocations are regarded as "high" callings and have much dignity attached to them. Others are regarded as "low", and those practising them are not treated with reverence. Society seems to grade with considerable unanimity and exactness the many occupations in which its members engage as means of livelihood. The basis for the ratings is very difficult to determine. It is not the service rendered to humanity, for a successful money-maker or politician who has devoted a long life to his own profit and aggrandizement will usually be more highly

honoured than a devoted, self-sacrificing mother who has reared a large family of fine citizens or an altruistic, earnest, efficient school teacher who, by his example and instruction, has helped hundreds of boys and girls to become better and stronger men and women. If there is a definable basis, it seems to be the special character of the work done, and the supposed qualifications for such work. As these characteristics of vocations change, their prestige changes. When surgery was a rule-of-thumb trade, practised by members of the mechanic class, it was considered of equal importance with barbering. When it developed a scientific foundation that required years of study for its mastery — study of a kind that called for the most superior intellects — society raised the status of surgery to that of a "high" calling. Another factor involved, doubtless, was the importance attached by society to the outcome of the work performed. When surgery was regarded as being on a par with barbering, human life was lightly regarded. As men came to place higher and higher value on human personality and physical well-being the vocations that provided means of relieving pain and prolonging life were accorded greater prestige. This relationship between commonly accepted social values and the social rating of occupations that affect such values is an interesting phenomenon. The almost universal regard for those who entertain and help men momentarily to forget their troubles and anxieties is a well-known example of this relationship.

THE SELECTIVE QUALITY OF VOCATIONS

This quality of social status, or degree of prestige, suggests the selective character of vocations. However much an individual, of any social group, may desire the honours and emoluments of a certain professional calling, he is not likely seriously to consider entering such a profession unless he is aware of the ability required and is willing to pay the price of preparation. Since, this price includes years of study involving intellectual work of exceptional quality, relatively few make the attempt; and those who do usually have many of the necessary qualities for success. Men of little general ability are usually content with positions that do not require unusual powers. Physically weak men rarely try to enter vocations requiring great physical strength. Notwithstanding that

almost all men strive to better their economic and social condition, most men recognize the appropriateness of the general level or status of the vocation in which they ultimately find themselves. This attitude was expressed to the author by an interurban-car conductor who said: "This is a good job for a fellow like me who hasn't got much education". In like manner the son of a family high in social prestige is rarely attracted by callings that are not high in general social rating. Thus, the process of selection operates even in states that are most democratic. This, of course, does not mean that men always enter the callings for which they are by nature and training best suited, but it suggests that generally vocations, because of their social status, character, demands on ability, and entrance requirements, possess important selective qualities.

EDUCATIVE VALUES OF VOCATIONS

Vocations are not only selective but educative. They produce many changes in those pursuing them and result in important environmental adjustments. A person cannot practise the skills, apply the related knowledge, and assume the attitudes appropriate to any particular vocation without increasing his skill, enlarging the meanings of his related knowledge, and adding significance to his attitudes. This process results in better economic and social adjustments, a broadening of the range of environmental appreciations, and an increase in the number of valuable facts and ideas possessed. In this sense, vocations produce growth of the sort usually designated as education. Obviously, they vary greatly both in the degree and in the quality of the education resulting. There are innumerable factors in a situation that cause variations in outcomes. Among such factors are the susceptibility to change of the individual engaged in a given vocation, his capacity to acquire meanings, his willingness and ability to assume responsibility and to make choices, the extent and character of his general information, the range and kinds of intellectual habits and experiences he brings to his occupation, his social and intellectual background and outlook, the character of the vocation, the social rating of the vocation, and the social consequences of the practice of the vocation.

Not only do these and other factors affect the quality and degree of the educative consequences of the following any

particular calling, but wide variations are found in each of these factors. Hence, it is impossible accurately to evaluate the educative values of the vocations, but that such values exist seems clear. In fact, there is a marked tendency in recent years to emphasize the importance of vocational experiences as means of education in contrast to school experiences. A better understanding of the magnitude of the range of individual differences has led many to realize that for a large proportion of the population, perhaps the majority, the vocational experiences constitute a more effective means of education than those of the school and may well be substituted for them. Nicholas Murray Butler once wrote of certain students "found ineligible to be permitted to enroll in any part of the university": "... many of them would be better advised if they sought the discipline and the education of some gainful occupation that work itself is an educational instrument of unrivalled utility and significance usually escapes public attention. The discipline and information which some persons obtain from books and laboratories, others obtain from systematic occupation. It would be a calamity if the notion were to gain ground that every youth of whatever talent, capacity or temperament must spend the years up to eighteen, twenty or twenty-one in receiving systematic instruction in an educational institution".²

With reference to children under sixteen years of age, Dr. Anna Reed wrote: "In the old age, educators assumed that juvenile employment was a legislative problem; in the new age, they are coming to see that it is an educational problem — that it means the recognition of juvenile employment as a legitimate and constructive factor in education".³ The extent to which juvenile occupational experiences may be wisely substituted for school activities is unknown, depending, in a measure, upon the ends sought. However, the complexity of modern life suggests a greater utilization of means other than the usual school activities, and doubtless a greater

2. *Butler, Nicholas Murray*, Annual Report of the President, 1925, p. 30, Columbia University, Bulletin of Information, 26th Series, No. 10, Dec. 5, 1925.
3. *Reed, A. Y.*, "Junior Wage Earners", p. 123, The Macmillan Company, New York, 1920.

use of occupational experiences might well be included in the program of public education.

VOCATIONS AS MEANS OF SERVICE

Not only are vocations educative for the individual, but they constitute his chief means of adding to the wealth and well-being of society. In this respect the significance of a vocation is not merely economic but social, in a broad sense. Vocations vary greatly in the facility afforded for direct service to society, and individuals differ even more greatly in the purposes that motivate their vocational activities. It is true, however, that whether a man is an illiterate, unskilled industrial worker or a cultured altruistic professional man, his vocation affords him his chief means of playing a part in the constructive work of civilization.

VOCATION AND ECONOMIC PROGRESS

A vocation is a social institution. Men are identified in society chiefly by the vocation to which they "belong". A common question is, "What is he?" The answer is, "He is a salesman", "He is an insurance agent", "He is a carpenter", etc. Men are thus thought of, classified, and dealt with in social and economic intercourse. It is the sum of the vocations that constitutes the economic fabric of civilized communities, rather than the sum of the individual persons belonging to the community. A person is not significant in economic life except as a member of a vocation, and his status is determined chiefly by such membership. The traditional class distinctions of nobility, peasantry, bourgeoisie, proletariat, capitalist, and labourer are, at base, occupational distinctions. For centuries men have organized themselves in occupational groups for the purpose of promoting the welfare of the vocations in the general competition among groups. Society continually legislates with reference to such vocational groups and, by dealing with individuals as members of the groups concerned, recognizes the vocations as social institutions.

Since organized society is, in the main, the coordination of the vocations and of organized groups of vocations, social progress depends, in large measure, upon the progress of the vocations. Progress in the industries is the result of the

increased skill and efficiency of engineering, the mechanical trades, salesmanship, management, and other industrial vocations. Business develops as the merchants, bankers, advertisers, and others become expert. And so it is throughout economic life. Economic progress is but the total of the advances made by the various vocations.

VOCATIONS CLASSIFIED

In common speech men are referred to as professional men, businessmen, farmers, or labouring men. This classification is inexact, and there does not seem to be any general agreement on the basis of such a grouping. What are the characteristic features of a profession? What are the vocations which may properly be designated as business? What kind of labour?

It is much easier to list the vocations that are classified by common consent as professions than to define a profession. Such a list includes medicine, law, the ministry, college president, college dean, school principal, college professor, consulting engineer, research scientist, actor, artist, statesman, waiter, military officer, dentist, architect, lecturer, and perhaps a few others allied to certain of these occupations. Then there are vocations occasionally referred to as professions, such as public accountant, veterinary surgeon, school teacher, social worker, nurse, undertaker, newspaper editor, city or state politician, photographer, pharmacist and hospital technician which seem to have more characteristics in common with generally recognized professions than with business or labour. An examination of this list of professions and semiprofessions reveals not a single common characteristic that clearly distinguishes them from other vocations. Neither the extent of education, expert knowledge, character of social service, or method of remuneration, nor any other factor appears that is common to the group but not found in other callings. One is therefore driven to the conclusion that the classification of profession is arbitrary, based solely upon custom or social dictum. When that basis is granted, it is possible to see a consequence of the social designation: Society sets certain standards of education, training, and character for each, that is, society, after arbitrarily naming certain vocations "professions", selects the persons who may engage in them. The re-

ward for meeting the standards is a social prestige not accorded to other occupational workers.

To define business is equally difficult. Business vocations seem to include all those occupations which are not professions or semi-professions but which concern production, manufacture, buying, selling, transporting, financing, and protecting consumable goods and that involve more responsibility and dignity than are expected of labouring men. Here too it appears to be impossible to discover a single clearly distinguishing feature among the hundreds of business occupations though there seems to be less uncertainty about them than about the professions.

In spite of the fact that the classification of a farmer is fairly definite in meaning, an analysis of the work of men who are so designated presents difficulties. To meet certain of these difficulties, such terms as "agriculturist", "farm manager", and "dirt farmer" have become current. Other farm activities clearly belong to the labour group.

The last group, labouring men, includes all those occupations requiring chiefly manual labour, little or no educational qualifications, and usually hourly, daily, or weekly wages. It is not possible to define even this group so that the definition will unmistakably described it; there are at least three large divisions of this group, namely, skilled, semi-skilled, and unskilled labour. The term "skilled labour" is usually applied to those mechanical trades requiring a regular apprenticeship or other prolonged training and calling for the exercise of judgement and technical knowledge. Semi-skilled workers are those who engage in specialized phases of a skilled trade but do not practise a whole trade. The name "unskilled labour" designates that large class of manual workers who perform the work of the world that requires little exercise of judgement and chiefly muscular dexterity and endurance rather than skill. Another means of distinguishing the grades of manual labourers is the classification based on the amount of time needed for training. Work that can be learned in a period of a few hours or a few days is designated as unskilled; work requiring several weeks for its mastery is semi-skilled; and work requiring a careful training extending over a year or more is skilled. Such bases of classification are obviously inexact and not wholly satisfactory, but they seem

to meet present popular needs. It is only when scientific investigation is directed toward a given problem that exact classifications are agreed on; and the systematic study of occupations is only in its initial stages.

CHARACTERISTICS OF VOCATIONS

Human occupations seem to have remarkable vitality. There is good reason for doubting that any established occupation has ever wholly disappeared, notwithstanding that its significance may be changed utterly and its methods may have become so different that it is almost unrecognizable. As customs and wants vary from generation to generation, the importance of vocations fluctuates; but somewhere on the earth, one can usually find a survival of any human occupation that has ever existed as an established means of meeting human wants. Many interesting survivals of ancient and medieval vocations no longer regarded as very important to society may be found in any city. A large number of occupations, however, retain their importance to human life through whole millenniums. This does not mean that they do not undergo changes. One of the most striking characteristics of all vocations is their tendency to change. They change in magnitude, method, and function. They change in value, in prestige, and in their demands on skill and intelligence. These changes are continuous and vary greatly in speed. One of the most interesting phenomena in organized human life is this constant variation in the character of the vocations.

Not only are the established occupations constantly changing, but new ones are arising almost daily. Many "new" vocations are really highly developed specializations of traditional occupations; the specializations have become so important that society has set them up as whole vocations. This process — the transformation of subdivisions of old vocations into new complete trades, professions, or lines of business — is continuously operating and is easily observable in the development of such occupations as those of optician, oculist, dentist, interior decorator, landscape architect, dental mechanic, high-school dean of girls, school counsellor, employment manager, personnel director, and credit manager. Most of the new occupations have arisen, however, as a result of new

inventions, new knowledge, and the increased complexity of civilized life. The list of such vocations is almost endless, yet it seems to be growing daily. A few that come readily to mind are the many railroad occupations; most of the automobile occupations: nearly all the occupations of the electrical industries; those having to do with aviation, the steel industries, the stock exchange, the motion-picture business, the advertising business, the heating and ventilating industry, the many fields of scientific research — both those attached to modern industry and those attached to the university — and in numerous trades and offices such occupations as typist, comptometer operator, linotype operator, pressman, steam fitter, cement finisher, asbestos worker, elevator constructor, and hoisting engineer. The list is so long and changes with such rapidity that it is impossible even to estimate the number of vocations practised in modern civilized nations. This multiplication of vocations is one of the chief characteristics of contemporary economic life.

In general, human vocations seem continually to increase in number to become restricted in range, and to rise in quality. These tendencies may be explained by the increase in complexity of social and economic life, which necessitates specialization and division of occupational activities by the continuous increase in wants; and by the rising standards of living which results in more expert service and better quality of products. The extent of these tendencies in civilized life and in the vocations belonging to civilization is amazing.

Even a cursory view of the constantly shifting figures in the picture of contemporary vocational life impresses one with the extreme difficulty encountered by youth, who face the ever-new problem of finding a place in the scheme. There are two phases of this problem: first, the choice of the place the person would like to occupy, and, second, his preparation to occupy that place. Both aspects of the problem become increasingly difficult as the years go by. Society has long been indifferent to this dilemma facing its new members; but the ever-growing number of economic tragedies and the increasing need for more and better workers at all levels are rapidly forcing into being organized efforts to aid youth in choosing a vocation and in preparing for their advent into

the bewildering turmoil of the modern work of production, distribution, and service.

The pace of economic life is so fast, and the struggle is so tense and absorbing that society is gradually relegating all the work of preparing youth to the schools. Year by year more of the total function of guidance, training, and education is allotted to the schools. The schools are far from being prepared to assume the new responsibilities heaped upon them; but whether ready or not, they now face the two-fold task of aiding youth to choose its work and to prepare for it. The first of these duties educators have named vocational guidance and the second, vocational education. It is primarily with the latter that this book will deal, and it is here thought of chiefly as the task of preparing boys, girls, men and women to participate efficiently in economic life, and, more definitely, of training them for their "chief calling" — their "special means of making a livelihood". The two phases of the total problem, choosing and preparing for a vocation, cannot be completely separated, and obviously such a division is undesirable; but each is so difficult and complicated that the schools, in harmony with the tendency of all vocational activity, have come generally to specialize the two functions. Hence, vocational education is a specialized problem of modern education.

THE HISTORY OF THE
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TO THE PRESENT TIME
IN TWO VOLUMES
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PART — IV

VOCATIONALISATION OF EDUCATION IN DEMOCRACY

- The Nature and Meaning of Democracy
- Democracy as Action
- Basic Concepts of Democracy
- Democracy as Equality of Opportunity
- Factors Affecting Democracy
- Education and Democracy
- Democracy and Vocationalisation of Education

PART IV

THE HISTORY OF THE INDIAN ISLANDS

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THE NATURE AND MEANING OF DEMOCRACY

Political philosophers repeatedly have pointed out the fallacy of accounting for the national characteristics, institutions, and point of view of a people solely on the ground of their form of government. Democracy itself is not a fixed condition of social organization easily identified, classified, and defined. Indeed, men have never fully agreed on a definition of democracy. Political scientists think of it as a form of government; and idealists not of the profession of politics think of it as a spiritual community bound together in a fellowship or fraternity of ideals and aspirations. Dewey, in an essay written in 1888, said: "To say that democracy is a form of government is like saying that home is more or less a geometrical arrangement of bricks and mortar; that the church is a building with pews, pulpit and spire. It is true; they certainly are so much. But it is false; they are so infinitely more. Democracy, like any other policy, has been finely termed the memory of a historic past, the consciousness of a living present, the ideal of the coming future. Democracy, in a word, is a social, that is to say, an ethical conception, and upon its ethical significance is based its significance is governmental. Democracy is a form of government only because it is a form of moral and spiritual association".¹ And in another place he says: "Democracy and the one, the ultimate ethical ideal of humanity are, to my mind, synonyms. The idea of democracy, the ideas of liberty, equality, and fraternity, represent a society in which the distinction between the spiritual and the secular has ceased, and as in Greek theory as in the Christian theory of the kingdom of God, the church and the state, the divine and the human organization of society are one".² Thus it is held that democracy is a form of Government; a type of

1. Dewey, John, "The Ethics of Democracy", p. 18. University of Michigan, Philosophical Papers, Second Series, No. 1, Andrews and Company, Ann Arbor, 1888.

2. *Ibid.*, p. 28.

social and economic grouping with characteristic institutions, customs, and attitudes; and a spiritual commonwealth of ideals expressing itself through social, economic, and political forms and institutions. However conceived, democracy is a living, and therefore changing, policy.

DEMOCRACY AS ACTION

Great minds of every generation have tried to interpret the term democracy in terms of action and national purposes that express the finest ideals of the people. The word "democracy" has been used as a shibboleth to call the people in times of stress to higher levels of thinking and endeavour. Woodrow Wilson in a passage in his address on Abraham Lincoln said: "And the hopes of mankind cannot be kept alive by words merely by constitutions and doctrines of right and codes of liberty. The object of democracy is to transmute these into the life and action of society, the self-denial and sacrifice of heroic men and women willing to make their lives an embodiment of right and service and enlightened purpose. The commands of democracy are as imperative as its privileges and opportunities are wide and generous . . ."³ Men increasingly have come to think of democracy as a principle underlying all aspects of community life, and not only life as it relates to civil government.

BASIC CONCEPTS OF DEMOCRACY

"Democracy is more than institutions and ways of life. It is a great social faith which, in response to the yearnings and struggles of many races and peoples, has been developing through the centuries. It is a bold and positive faith which, now as in other times, calls men to battle for the defence and realization of noble and lofty conceptions of the nature and destiny of men. It is the finest of all the social faiths that mankind has fashioned and followed during the thousands of years of human history.

"It will conquer because it is the only social faith that can bring justice and mercy to all men".

3. *Wilson, Woodrow*, "Address on Abraham Lincoln", delivered Sept. 4, 1916, "Democracy Today", Christian Gauss (ed.) Scott, Foresman & Company, Chicago, 1917.

"The articles of the democratic faith have never been codified. They are recorded in the carefully preserved sayings and writings of the great prophets and seers of mankind, even as they may be found in the fugitive utterances and letters of ordinary men and women, in the songs and lamentations of the oppressed. They are embodied in customs and institutions — in the public school, the Bill of Rights, courts of justice, representative legislatures, systems of law, and ethical codes. Although the boundaries of this faith are elastic and changing, the following articles, related and interwoven, must be included:

"First, the individual human being is of surpassing worth.

"Second, the earth and human culture belong to all men.

"Third, men can and should rule themselves.

"Fourth, the human mind can be trusted and should be set free.

"Fifth, the method of peace is superior to that of war.

"Sixth, racial, cultural, and political minorities should be tolerated, respected, and valued.⁴

DEMOCRACY AS EQUALITY OF OPPORTUNITY

This concept has been slow in forming in the common minds of the people, and still slower in finding expression in the social and economic institutions of the nation, other than governmental. By constant repetition of the theme, however, this principle of democracy is gradually working its way down into the thought of the people as it relates to the common life. A practical working definition of democracy as the modern mind seems increasingly to conceive it and as enlightened social effort suggests it, would be approximately this: "Democracy is that form of self-governing society that guarantees to each of its members equality of opportunity to grow and achieve to the extent of his ability, and to participate in the general cultural achievement to the same extent". This does not mean that democracy guarantees growth and

4. Educational Policies Commission, "The Education of Free Men in American Democracy", pp. 32-33, The National Education Association and the American Association of School Administration, Washington, D. C., 1940.

achievement, but only equality of opportunity to grow and achieve. Such opportunities are notoriously unequal and to the extent to which inequities exist society is undemocratic. This definition involves ensuring opportunity to grow physically, mentally, spiritually, educationally, and economically. It does not call for identical opportunities for all citizens but equal opportunities for all to grow and achieve. It implies the removal by society of obstacles over which the individual does not and cannot have control. Such a definition includes all that was formerly meant by democracy, but implies much more. To guarantee equality of opportunity to grow suggests social compulsion in matters of health, of physical, mental, and moral protection. It further suggests that protection from unfair handicaps arising either from one's ability requires the development of the powers of appreciation and the understanding of the processes of modern civilization. Altogether, the definition implies a large degree of social supervision of the individual's life, to the end that his freedom to grow may not be infringed.

FACTORS AFFECTING DEMOCRACY

Many factors, doubtless, have played a part in expanding and making more concrete the democratic theory upon which the government is based. Not the least among them has been the changing character of the economic life of the nation. It is not strange that a nation of four million people scattered over a vast territory in towns, small settlements, and farms, among whom neither great wealth nor dire poverty existed, should have a somewhat different manner of interpreting democracy from that same nation after it had become a great industrial country of more than one hundred million people, crowded into great industrial cities and confronted with all the social problems of the factory era. Such changes in economic conditions necessitate new applications of the governmental principles and social theories that control the national life. The trend clearly has been to expand the meaning and expression of democracy into the realm of ordinary social and economic relationships. The great city has always been the most favourable soil in which to propagate democratic ideas. The open country has fostered the spirit of independence and individualism rather than democracy. It has, al-

most without exception, been the stronghold of conservatism and autocratic system of government. The city has been the center of unrest, revolt, and experiment. Inequalities, injustice, oppression, need, and suffering have always been poignantly apparent where men have been crowded together in great numbers. In the cities they quickly express their discontent, and as readily form themselves into groups to remedy undesirable conditions. Thus very early the city became concerned with economic and social democracy as well as with political democracy.

The industrial revolution, which produced the great modern city, furnished it with many serious problems. Among the greatest of these is inequality of opportunities. The utter dependence upon one another of the citizens of such a highly organized, minutely specialized community as the industrial city makes oppression easy and equalization of opportunity a very complex thing. But the consciousness of this problem serves to make people insistent on their rights and alert to guard their privileges. Out of this situation has come the modern interest in extending the functions of government to the details of the daily life of the people. Hence, government today is concerned with the health, living conditions, working facilities, education, and morals of its citizens, as well as with its traditional functions.

EDUCATION AND DEMOCRACY

Education has changed continuously as the economic and social organization of the nation has developed. The function of education today is greatly enlarged beyond that of the early years of the republic. Modern life requires that all workers be trained for their work. To train some and not to train others creates inequalities that violate the spirit of democracy. To give all the same training only aggravates original inequalities. The modern concept of democracy does not call for equality of ability but insists on equality of opportunity. Hence every individual must be afforded the privilege of preparing himself to the extent of his ability to play his proper part in the national scheme of life. This obviously involves universal vocational education as one of the conditions of genuine democracy. Modern education must

therefore include provisions for the vocational training of all the people.

Only in recent years has there been any large acceptance of this principle. Traditionally, society has cheerfully provided vocational education for a chosen few who were thought of as social leaders. In an industrial society, where the struggle for existence is tense, where economic independence is almost unknown, it is not enough merely to train vocationally the "leaders." Gradually facilities have been provided for the training of workers in most of the "higher callings", whereas formerly vocational education was available in the schools only for ministers, doctors, and lawyers. It is only when efforts are made to provide for the training, by public agencies, of mechanics, clerks, and workers in the present day, the problem of vocational education is, in the main, that of the extension downward of facilities for vocational education. As Snedden said: "The issues of vocational education are far too important to permit of their being damned by the vague word 'undemocratic'." That is a charge frequently met. It is said to be undemocratic to teach a boy how to be a carpenter because in so doing he may be kept from being a statesman. It is more democratic, it is sometimes said, to give him a broad education and leave him to his own devices as far as his vocation is concerned. It seems strange that this should be true of the manual worker but not true of the boy who would be a professional man. If democracy implies equality of opportunity to grow and achieve to the extent of one's ability the workers in the less exalted vocations should be as thoroughly trained for success, at their respective levels, as those of higher occupational stations. Doubtless much of the opposition to a comprehensive program of vocational training is quite as important at the lower levels as at the higher. The fact that the needed training is of a different order, and may be acquired in a shorter time, makes it no less necessary than that required by the professions. The modern concept of democracy seems to require adequate vocational education for all workers, whatever their rank in social and economic life.

5. *Snedden David*, "Vocational Education", p. 61, The Macmillan Company, New York, 1920.

DEMOCRACY AND VOCATIONAL EDUCATION

Merely to provide vocational education for all grades of workers does not ensure a democratic program of training for occupational life. Such education must be fitted to the needs of those for whom it is provided. These needs vary greatly. There are great variations in native ability, educational background, and economic status. For many, prolonged school training, presupposing a thorough general education, is both possible and desirable. For others, short, intensive, highly specialized offerings are the only feasible means of meeting their needs. For many, programs of training that serve to supplement and give meaning to the daily experiences of work in an occupation are the most effective schemes of vocational education. In the case of certain vocations and certain individuals, preparatory training, immediately followed by occupational experience, suffices; but in many instances, information and training are of value only when they are given at the moment of need. Much vocational education is needed by youth either while engaged in acquiring a general education or immediately after finishing the period of academic schooling. A need of equal urgency is for upgrading or promotional training for the mature worker. Some of the work of vocational education should be maintained by the public schools and colleges, some by privately endowed institutions, business and industrial corporations, and organised groups of workers. Various needs are severally served by correspondence schools, trade and business schools, public full-time schools, public part-time schools, evening schools, colleges, corporation schools, apprenticeship, and private study. No single scheme of vocational education could be democratic. To be such, all grades and classes of workers and occupations must be included in the national program; hence, there must be many kinds of schools, classes, schemes, and methods. Vocational education in a democracy is an extremely complex undertaking. A program of education that omits it, or ignores its complex character, cannot be genuinely democratic. Equality of opportunity to grow and achieve to the extent of one's ability inevitably makes necessary a comprehensive program of vocational education.

PART — V

METHODS IN VOCATIONALISATION OF EDUCATION

- The Threefold Aspects of Vocationalisation of Education
- The Teaching Skills
- Teaching Related Technical Knowledge
- Developing Attitudes
- Amalgamation of Theory and Practice
- The Project in Vocationalisation of Education
- The Case Method
- The Selection of Methods

THE THREEFOLD ASPECT OF VOCATIONAL EDUCATION

The successful practice of any occupation, other than the simplest unskilled types of work, involves skill, related technical knowledge, and appropriate occupational attitudes. Obviously, these aspects of vocational practice do not exhibit themselves one at a time but are inseparable parts of the whole of occupational activity. Nevertheless, in the teaching of a vocation it becomes convenient to consider each aspect separately, in order to ensure effective instruction. It is doubtless true that while acquiring the skills of a given vocation, one will learn certain bits of related technical knowledge, and will almost unconsciously begin to assume points of view that are conducive to desirable attitudes for practising that vocation. Yet fully to meet the needs of a vocational student, it appears necessary for the teacher to give special attention first to one and then to another of the three aspects of a vocation. Experience seems to indicate that a somewhat different teaching situation is involved in each instance. The acquisition of skills presents a different psychological difficulty from the learning of technical facts and the assumption of appropriate occupational attitudes requires still another set of factors. Hence, in a study of methods effective in the teaching of the vocations, it is desirable to examine separately the steps involved in efficient instruction in each phase of vocational teaching.

TEACHING SKILLS

The development of skill is one of the most important responsibilities of the vocational teacher. Far too often teachers are negligent with reference to a constant insistence upon high standards of skill. As important as technical knowledge and desirable occupational attitudes are, they can never compensate for the lack of skill. It is therefore necessary for the vocational teacher to consider carefully the nature of skill and the psychological conditions requisite for the building

of needed occupational skills. Skill has been defined as "a thoroughly established habit of doing things in the most economical way".¹ This is a useful working definition, but a further factor must be considered. Pear has defined skill as "the integration of well-adjusted performances, adapted under varying situations to the attainment of a desired result".² Fairchild, in commenting on the definition of skill, pointed out that "while it consists primarily of habits, it is more than merely a congeries of habits. The habits, at least, must be of the kind to ensure adaptation."³ The same author, writing with reference to the importance of skill, said: "... where skill is given play it becomes in the workman developing it much the greatest source of his satisfaction." Later in her study she wrote that "failure to utilize men's capacity for skill development is like failure to utilize the capacity of a waterfall flowing past one's factory doors, or of the coal in one's bins, to its fullest extent. It is a waste of a natural utility directly at hand, whose use would be advantageous to everyone concerned."⁴ The development of skill is a difficult phase of vocational teaching and requires the utmost attention to the details of correct method on the part of the teacher.

Ordinarily, the acquisition of skills having the complexity of most vocational skills involves three factors: imitation, repetition, and occupational participation. It is fairly easy to learn an abstract fact, or to adopt a series of related ideas, merely from being told of the fact or the series of ideas. But to learn to perform an act involving a more or less complex group of motor adjustments usually requires something more than verbal directions. This is due, in part, to the extreme difficulty of describing consecutive movements so as to create a clear image in the learner's mind, and partly to the habitual practice, from infancy on, of learning motor skills through imitation. Whatever the explanation, there can be little doubt

1. *Selvidge, R. W.*, Skill, *Industrial Education Magazine*, Vol. XXX, No. 5, November, 1928.
2. *Pear, T. H.*, The Nature of Skill, *Journal of the National Institute of Industrial Psychology*, Vol. 4, October, 1928.
3. *Fairchild, Mildred*, Skill and Specialization — A Study in the Metal Trades, *The Personnel Journal*, Vol. IX, Nos. 1 and 2, June and August 1930.
4. *Ibid.*, pp. 42-44.

of the necessity, in most instances, for the opportunity to imitate, when initiating a standardized skill. Parents from time immemorial have shown their children how to perform a task and have required the learner to imitate the performance. Needlework, musical instrument playing, drawing, painting, pronouncing unfamiliar words, using mechanical tools, etc., have been taught, through the ages, by the method which requires the teacher to say: "This is the way to do it. Watch me and try to imitate my movements". Hence, the fundamental necessity of the teacher's being a master of the arts he would teach another. It is a common experience of vocational teachers to find that when their instruction in method of procedure does not correspond perfectly with their performance, while giving the instruction, the pupils invariably learn the method used by the instructor, rather than the one they are instructed to follow. Those engaged in the training of teachers have often noted this phenomenon. The experience of the race seems to suggest imitation as a necessary factor in the learning of a skill.

Imitation, however, is chiefly important in initiating a skill. After acquiring the technique of an action by reproducing the movements of one already accomplished in the art, the student must repeat the action many times before he attains any useful degree of readiness. Failure to provide for repetition will result in producing amateurs rather than skilled performers. Modern psychology has been able to throw much light upon this aspect of vocational teaching through experimental studies in habit formation and fatigue.

Both the imitation of a master and frequent practice fall short of complete preparation for skilled vocational practice. A third necessary factor is participation, under typical conditions, in the actual work of the occupation. It is chiefly because of the necessity for occupational participation that no school has been able fully to prepare a student for a vocation. It is impossible completely to reproduce in a school the conditions of occupational life that affect the exercise of the vocational skills. Even where all the physical features of occupational life are stimulated in the school, the psychological aspects are lacking. The feeling of competitive strain, the necessity for meeting commercial standards of workmanship, and the realization of the economic reality exacted by voca-

tional life for failure to meet its standards all inject elements into the work situation that the school cannot fully reproduce. Hence, to complete the training of a student in a skill that is saleable in occupational life, part of the practice must be had under actual production conditions. This is as true in the case of the doctor, the lawyer, and the preacher as in that of the homemaker, the stenographer, and the clerk, or of the farmer and the mechanic. It is the factor of skill in vocational education that makes some form of apprenticeship necessary in training for every vocation.

TEACHING RELATED TECHNICAL KNOWLEDGE

The teaching of related technical knowledge presents a different set of conditions. The purpose is to impart facts, the knowledge of which enables the worker better to use his skills. Merely to perform work skillfully does not necessarily mean to perform it wisely or intelligently. To be successful in occupational life a person must know when and where to use his skills and just what skills to use in a given situation. To have such powers of understanding and self-control involves many factors; but one very necessary factor is the possession of the technical facts that lie at the back of the skills and that are appropriate in a given situation. Learning these technical facts is part of the process of acquiring a vocational education. Perhaps success is possible no matter what the method of instruction; but in general, it seems that the most desirable method is the one that imparts in the simplest and most direct manner the needed facts. This method in many instances, doubtless, is to tell the student what he needs to know. If the telling is done at the time when the facts are really needed, and the student recognizes the need, the teaching is very likely to be effective. The laborious "developmental" method of "drawing the facts out of the student" by dint of much discussion and questioning is perhaps desirable in some school courses in other fields of teaching. The purpose of vocational education, however, is simply to give the skills, facts, and attitudes needed, as quickly and effectively as possible. There are, however, certain types of related subject matter that are too complicated and difficult to be learned by so simple a method as merely being told. This is particularly true in the professions, where the needed technical knowledge

in such cases, the usual best practices of general education are appropriate. In all cases, the most effective work is possible when the related material is presented at the time it is needed by the student in order to perform the skills of the vocation most efficiently. Related knowledge should be genuinely related, both in time and in content. For this reason, it is probably true that the teaching of professions, and other of the "higher" vocations, would be more effective than it often is if it were based upon a broad, soiled foundation of liberal and scientific education; the instruction could then be limited to material that is definitely and obviously related to the skills being taught. The important factor in successful teaching of related technical knowledge is that the student feels the need of the knowledge, and is given an opportunity, at the time he feels such need, to acquire it rapidly and in the most direct fashion.

DEVELOPING ATTITUDES

For the successful practice of a vocation, one must have the attitudes appropriate to one's particular calling. Such attitudes as the following are involved in most occupations: pride in one's vocation, a persistent desire for the highest degree of efficiency, a feeling of social responsibility as a worker in the particular field involved, jealousy for the prestige of the calling, and high standards of vocational ethics in dealing with clients or employers and with fellow workers. Attitudes of this sort, as well as the opposite kind, are in large measure acquired by unconscious processes. One is likely to assume, by gradual degrees, the attitudes of his associates or his superiors in authority in the vocation. Vocational attitudes are, however, much too important to leave wholly to chance, and it therefore becomes a part of the work of vocational education to build desirable vocational attitudes. Since attitudes are essentially emotional in character, the problem is to produce appropriate, or desirable, "feelings" with reference to the vocation. Basic factors are vocational self-respect and occupational pride. The other desirable attitudes seem to be predicated upon these two; hence it is important, as a phase of training, to develop these fundamental feelings.

An effective means of leading a learner to an attitude of vocational self-respect is to bring him, through effective

training, to a feeling of mastery. There can be no large degree of self-respect as a practitioner unless one is conscious of the possession of skill and expert knowledge. Nothing can take the place of such consciousness. Mere overconfidence, or egotism, does not produce the necessary attitude; it must come from genuine possession of knowledge and skill. For this reason the vocational teacher should be much concerned with imparting a rich store of professional, or occupational, lore and technical facts, as well as with rapid development of a high degree of skill.

Occupational pride, on the other hand, grows from a knowledge of the economic and social significance of the occupation to which one belongs and from a feeling of an exclusive fellowship with other members of the occupation. This feeling comes in part from the stressing, by the vocational teacher, of the importance of the vocation; and from putting the student in possession of the history and "secrets" or "mysteries" of the craft. Few things will produce the needed pride of occupation as effectively as a special knowledge of its history and "mysteries", and the realization that such knowledge is the peculiar possession of the members of the craft or profession. Inspirational talks, membership in professional or occupational societies, and more than all other influence, perhaps an unimpeachable occupational attitude maintained consistently by the instructor, are also means of producing a desirable occupational pride. Proper attitudes of social obligation can be developed through example and precept, and through the insistence, on all suitable occasions, upon the practice of a high type of social and occupational ethics. It is not safe to trust to vocational life the task of enforcing high standards of vocational ethics. If the vocational training agency neglects the building of desirable attitudes, they may or may not be developed by occupational practice. Its importance makes it one of the major obligations of vocational education. Above all technique of method is the example of the vocational teacher. His attitudes will inevitably affect the attitudes of his pupils.

AMALGAMATION OF THEORY AND PRACTICE

Vocational teachers, increasingly, are losing faith in what Snedden called "cold-storage education" — the teaching of a

large body of principles and technical facts before students have any use for them, hoping that when a use appears the student will immediately recall the principles and facts, and make appropriate applications of them. Experience clearly indicates the fallacy of the method. There are, at least, two causes for the failure of this procedure: in the first place, the study of theory before the practice which necessitates its knowledge is not sufficiently motivated to lead to its mastery; and in the second place, the mere intellectual acceptance of facts, or principles, is a very different thing from the ability to apply effectively those facts, or principles. Students seem to need to be taught facts and also taught to apply facts to concrete situations. For this reason, vocational teachers are finding that the most effective teaching proceeds in this order: first, the student is confronted with a practical problem or necessity for action, and is encouraged to attempt to do what is required, second, as he proceeds and becomes conscious of a need for knowledge, the necessary knowledge is given; and third, he is then taught how to use his knowledge in the particular situation before him. A rigid adherence to this sequence seems to be particularly necessary in the training of non-professional workers. It is the traditional method of apprenticeship and is used, in large measure, by corporation schools in training high-school and college graduates for particular positions in industry. In fact, any other method of learning is rarely met outside a school.

It is noteworthy that practice before theory is the normal or "natural" human way of learning. Man built bridges long before the science of structural design was developed. He sailed boats long before the sciences of navigation and of naval design were acquired. Children learn to talk long before they study grammar. Theory normally develops from practice. Man does what is needed to meet his purposes and only gradually discovers the basic reasons for his successes and failures. The mind seems normally to follow that sequence and the process rarely is reversed in human history. The schools would profit greatly from a greater recognition of this fact. Vocational education seems peculiarly unsuited to the traditional method of teaching principles and related facts before the practice that gives them value is undertaken.

THE PROJECT IN VOCATIONAL EDUCATION

The project method of teaching has long been used in vocational education. It has found its greatest use in agricultural and industrial education of less than college grade. In fact, its success as a means of holding interest and motivating the study of technical facts and related knowledge in these fields was the chief reason some years ago for the attempts to adapt it to the teaching of academic subjects. Its use in homemaking and in commercial education of less than college grade has also been extensive; but it has had a very limited use in vocational education of college grade. It seems to lend itself more readily to the teaching of boys and girls. This is probably due to the "immediate-mindedness" of children — their interest in the immediate effects of their activity and their almost total lack of concern with ultimate results. The psychological and pedagogical significance of the project as a teaching device has been discussed so generally that it is important here only to indicate its special values in vocational education.

In agricultural education, homemaking education, commercial education, and industrial education, of secondary school grade, the project has been extensively used. The occupations for which these types of vocational education prepare usually involve a series of such clearly defined and markedly concrete projects as raising a crop of corn, harvesting the wheat, reroofing the barn, cooking a meal, cleaning the house, preserving a given quantity of fruit, opening a set of books, getting out the monthly bills, putting on a sale, framing a house, making a pattern, making a set of drawings, etc. Hence it is important that in the training program the learner be habituated to undertaking, and carrying through, complete projects. In a project that is typical of the vocation for which he is preparing himself, the necessary skills and technical knowledge will be involved; and the project offers a normal organizing center for his new acquisitions of skill and fact. The interest-holding and aptitude-testing values of the project in such fields of work seem obvious; and it is highly useful in developing modes of thought and procedure characteristic of the occupation concerned. The project method, however, even in these fields of vocational education, cannot be used exclusively; exercise work is often necessary to develop manual

skill, and collateral lessons in related technical material, not immediately involved in the projects used, are sometimes needed. But the project is the core of much of the vocational training for the occupations listed above. To get the maximum value from the project method the teacher must refrain from doing the pupil's thinking for him. The pupil must be held responsible for planning and executing in logical sequence every step from the beginning of the project to its successful completion.

THE CASE METHOD

Probably because of their historic association with liberal education, the "learned" professions have, until recent years, used chiefly the traditional methods of the liberal-arts college in the preparation of those entering them. Courses have been arranged in logical, rather than pedagogical, sequence; great stress has been placed upon principles and theories presented, more or less dogmatically, by the usual lecture or textbook procedures. In recent years, however, efforts have been made to develop more effective methods — methods more in harmony with the character and purposes of vocational education. Among the newer practices, the case method has come to be held in great favour. It is the method by which actual cases in vocational practice are studied, either first hand or by means of detailed records. Law schools have made the largest use of this method. Briefly, their procedure is as follows: Instead of presenting the principles of criminal law, and citing a few cases merely to illustrate the points made, the instructors give the students records of actual cases that have been tried and settled; and the students make a careful study of what actually took place. This method has the advantage of being concrete and interesting; and, for the purpose of training young people to deal in a practical and effective manner with the daily problems of actual practice, it seems to be an efficient method. It is particularly exposed to the danger of an overemphasis on expediency at the expense of principles, though it need not lead to such a result. Schools of medicine, journalism, agriculture, commerce, and education have also made a limited use of the case method. It appears to have its chief, if not exclusive, merit when used with mature students and with those who either have had practical experience in the

vocation being studied or have observed closely the procedures of those engaged in vocational practice. Whatever the limitations of the case method, it seems to be a definite advance over the traditional procedures; and it will no doubt come to be a standard practice in particular phases of all professional education.

THE SELECTION OF METHODS

The question of method is always an important matter for the teacher of vocational education to consider. Both speed and efficiency are involved in vocational training, and the results of the training given are much more easily determined than they are in liberal education. Hence, the method used becomes highly important. Mere tradition should exert small influence, and the chief question should be "What method will produce the most effective worker in the shortest time?" The teacher in any field of vocational education ought, therefore, to be familiar with all available methods and to be able to adapt himself easily to any method that will meet his immediate needs most effectively. It is not improbable that several methods should be used in the same field and that in special cases a combination of two or more can be effectively utilized. In each case, the method chosen should be the one most nearly in keeping with the character of the vocation involved, the age and previous education of the students, and the type of worker to be trained. Because vocational education is concerned with the training of all grades of workers, from unskilled workers in routine tasks to the highest grade of professional practitioner, a variety of tested and efficient methods is necessary. Progress will come only from many experiments in procedure; and the methods now being tried in the various fields should therefore be carefully studied and evaluated, not with the purpose of settling upon one best method but the dealing with each field and aspect of vocational education in the most efficient manner. The contemporary interest in this subject promises much for the improvement of vocational education practices in all departments of the field.

PART — VI

VOCATIONALISATION OF EDUCATION IN THE HIGHER SECONDARY SCHOOL

- Programme-Planning
- Determining the Scope of Occupational Preparation:
 - (1) Information (2) Guidance and Counselling (3) Early Warning of Change (4) Research (5) Education (6) Vocationalisation of Education (Training and Retraining) (7) Apprenticeship (8) Placement.
- Planning the Curriculum
- Teaching in Vocationalisation of Education Areas
- Developing the Curriculum and Determining Course Content
- Developing Instructional Materials
- Counselling Trainees
- Strengthening Instruction through Production
- Establishing the Safety Concept

TABLE - VI

PERCENTAGE OF DEFECTS IN THE BURNING
SECONDARY SYSTEM

Defect	Percentage
1. Defective material	10.0
2. Defective workmanship	15.0
3. Defective design	20.0
4. Defective installation	25.0
5. Defective operation	30.0
6. Defective maintenance	35.0
7. Defective inspection	40.0
8. Defective testing	45.0
9. Defective calibration	50.0
10. Defective adjustment	55.0
11. Defective alignment	60.0
12. Defective assembly	65.0
13. Defective disassembly	70.0
14. Defective cleaning	75.0
15. Defective lubrication	80.0
16. Defective painting	85.0
17. Defective packaging	90.0
18. Defective shipping	95.0
19. Defective receiving	100.0

The focal point of the programme of vocational education is the instruction that is given in a curriculum designed to meet the employment objective of an occupational area. To the degree that such instruction is given for occupations in which there is reasonable expectation of employment and to the degree that it contributes to the labour force requirements and economic growth of the area served, the programme can be considered a valuable asset to the community and a contribution to national welfare and security. Because of the importance of the teaching function and the unique characteristics of vocational teaching, an effort has been made to portray the role of teaching in vocational-education areas.

PROGRAMME-PLANNING

Programme-planning for vocational education looks in two directions at once: the occupational areas to be included in the overall programme must be determined; then other plans must be made for structuring specific curricula for the several occupational areas. For the one purpose, determinations are based on manpower requirements and on labour-market information; for the other, they are based on occupational analysis and the programming of learning units.

This inherent duality requires the utilization of many individuals and a wide range of services in order to achieve viable goals in each of the ventures.

DETERMINING THE SCOPE OF OCCUPATIONAL PREPARATION

A balanced programme of vocational education considers not only present manpower requirements and labour supply but also probable future requirements and projected supply — hence population mobility must be taken into account. Therefore, planning begins with a basic survey of the labour market to determine occupational categories, levels of employment in

the several categories, prognosis for changing requirements within the categories, prognosis for emerging occupational categories, and an analysis of employment trends. To be effective, the survey must include the entire constellation of occupations, accounting for all employment, actual and potential.

An examination of the determined demands in relation to the sources of manpower available for replacement and expansion purposes projected over a range of years — a requirements-and-resources analysis defines the training problem. Subtracting the training potential of the private sector, the result indicates the scope of the programme to be provided through public vocational education.

Arousing the community to a degree of concern for the manpower posture of the community is the first step in the development of an active manpower policy. An active manpower policy contributes to the economic growth of the community by increasing the quality and improving the adaptability of manpower and by providing the mechanisms needed for effective matching of qualified workers with jobs. In turn, economic growth helps provide the expansion of employment opportunities needed for an expanding population.

An active manpower policy for matching jobs and workers envisions the interplay of a variety of labour-market practices of which vocational education is of prime importance. Educational institutions, various placement organizations, and other public and private institutions all play roles.

All action elements of such a policy contribute to the planning and functioning of programmes for vocational education. The following basic needs and activities are involved:

(1) Information

Labour-market information must be available, including details on the type of occupational demand and available skills supply, both current and prospective. For maximum reliability and value, the information should be drawn from, and with the co-operation of, all parts of the employer, labour, and educational community.

(2) Guidance and Counselling

Effective guidance and counselling service is needed to translate statistical information into job opportunity information of value to those seeking career guidance. Such services should be started in elementary schools and should guide youngsters toward career decisions in vocations requiring training in accord with their aptitudes and aspirations.

(3) Early Warning of Change

An early warning system, freely contributed to by employers, is needed to advise of impending employment shifts, changing occupational requirements, and needs for new categories of workers resulting from planned product changes, major technological innovations, or long-range expansion. Such a system can provide the necessary lead time for the initiation of necessary training programmes.

(4) Research

Major and continuing research efforts are needed to gain increased understanding of key factors affecting functioning of the labour market and to make more available and to improve the accuracy of information on current and projected occupational requirements.

(5) Education

Current jobs and, increasingly, those of the future cannot be filled adequately by workers lacking minimum basic education. Each individual should be given a thorough general education as a base for acquiring necessary specific occupational skills.

(6) Vocational Education (Training and Retraining)

A balanced programme of vocational education is required to provide the range of skills needed in a competitive labour market. To bridge the gap between workers with needed skills and job requirements, retraining must be provided in both public and private sectors.

(7) Apprenticeship

To assure a continuing supply of highly skilled craftsmen, apprenticeship programmes should be initiated and supported by business and industry. Vocational programmes are needed

to provide pre-apprentice education and related instruction for apprentices.

(8) Placement

Good placement services can speed the matching of jobs and workers. Such services (including recruiting, testing, assessing and counselling on the basis of specific job vacancies and trained work-seekers) complete the cycle of transition from school to work.

The preceding enumeration of needs and activities makes it evident that the planning of a vocational education programme involves major segments of the community and the state agencies which provide services in the areas of employment security and vocational education. Thus, the programme that eventually evolves becomes a programme "of the people, by the people, and for the people". Labour, management, civic, and municipal groups become deeply involved in an assessment of manpower requirements and resources. Out of the public-spirited churning comes the determination of the occupational areas for which vocational education and training must be provided, either through the vocational school or through a co-operative venture involving the facilities, knowledge, and skills of the commercial and industrial community.

PLANNING THE CURRICULUM

Having determined the occupational areas for which instruction is to be provided, whether in business, industry, agriculture, health services, marketing, homemaking, or other field, the task at hand is one of curriculum construction: the assembling of units of instruction into courses and the combining of courses into a sequential curriculum. These curricula must meet the skill and knowledge requirements for the high school diploma or certificate of completion prescribed for the programme. Here again the knowledge and skills of the school administrator and the curriculum experts must be supplemented with the advice and assistance or representatives of the business-industry community who have access to a wealth of knowledge growing out of their personal involvement in the occupational area as employers, managers, and workers.

Knowledge acquired of what a worker must know and what he must be able to do, supplemented by advice from occupational advisory groups, will provide the raw materials and ingredients for the several courses that will make up the occupational skill and knowledge development programme. The involvement of the business-industry representatives provides additional insight into the equipment and paraphernalia needed to provide effective instruction. And for a bonus, their very involvement insures a clientele for placement purposes — a clientele that feels the programme belongs to it.

Curriculum development is a continuing process requiring an evaluation of the efficiency and effectiveness of the programme. The major criteria for evaluation are success in the placement of the graduates and their ability to hold jobs and move ahead in their fields. Again, the advisory groups continue to be an asset in assisting in the evaluation. Two, the former students, now job-holders, become a source of information useful in adjusting the curriculum to meet evolving needs.

Regarding the programme in vocational education, there are some principles to be observed:

- (1) Vocational education should occur as close to the time of application as possible. On the secondary level, vocational courses should be concentrated in eleventh and twelfth grades.
- (2) There must be sufficient concentration of work in each area to enable the student to develop sufficient competence to hold an entry job in a given occupation upon the completion of the curriculum.
- (3) A well-planned vocational programme integrates vocational education and general education. The vocational development should be built on a sound base of general education.
- (4) Some diversity of curriculum offerings is needed to provide for individual needs and to give flexibility to the programme.
- (5) All aspects of an occupational area cannot be included in the curriculum. Those skills which form the core of the occupation and which are necessary for entry into the occupation should be taught.

- (6) Vocational instruction must be geared to the times, preparing the individual to enter the world of work of today and tomorrow.

TEACHING IN VOCATIONAL EDUCATION AREAS

The quality of any educational programme is directly related to the quality of instruction. In vocational education, the first measure of quality is the level of competence of its shop, laboratory, and classroom teachers. Some of the competencies of vocational education teachers are the same as those required of all teachers, but the objectives, occupational structure, and operational patterns of vocational education call for a host of specialized abilities and understandings as well.

Because the primary purpose of vocational education is to prepare individuals for employment or advancement in an occupation, the instructional programme is based on the requirements and practices of an occupation, and teachers must be equipped with practical experience and professional training to provide students with the occupational skills, knowledge, attitudes, and appreciations they need to fulfil their aims. These students may be in-school youth or out-of-school youth and adults who are not employed and who need training to enter an occupation; in-school youth who work part time and who need technical instruction related to their occupation in addition to general-education courses required for high school graduation; or full-time employed youth and adults who needs supplementary training in order to upgrade their skills and knowledge for job security or advancement. To meet the diversified educational and training needs of these individuals and groups of individuals, teachers in the vocational areas must be not only occupationally competent but expert in the use of distinctive teaching methods. Teachers must have not only a general understanding of the learning process but an understanding of how people learn in a vocational environment. Teachers must know not only the general principles and methods of teaching but also the most effective methods of developing the skills and employment potential of youth and the skills and employment potential of adults.

Teachers must know not only the differences and similarities in shop, laboratory, and classroom instruction but also the most appropriate teaching techniques for certain situations in each area. Teachers must be qualified to provide not only group instruction but individual instruction.

To stimulate student interest and desire to succeed, the competent vocational teacher knows how to use, and uses, a variety of techniques. The teacher must be sensitive to teaching-learning situations in the shop, in the laboratory, in the classroom, and in the part-time student's place of employment. He must be able to easily adapt or modify instructional content and methods to the particular needs of a group of students or of an individual student.

The importance of individualized instruction in vocational education cannot be overemphasized, and a student's progress in school and later in employment is frequently due to the special and numerous benefits derived from this type of instruction. While used effectively in all areas of vocational education, individual instruction is pre-eminently suited to co-operative training programmes — teachers and co-ordinators in distributive and industrial co-operative training programmes must be masters of this technique.

Like all teachers, shop and laboratory instructors must be adept in the use of verbal presentations, but verbal presentations alone will not develop competent workers. The teacher must be able to demonstrate a variety of skills on an individual and group basis; he must be skillful in the use of individual and group conferences; he must know how to develop the student's appreciation of good workmanship and safe work habits.

The teacher must also be at home in his environment. A knowledge of the paraphernalia of vocational instruction — tools, machines, equipment, and supplies is essential to teaching success in vocational education. In an instructional area filled with hardware, the instructor must be able to "run the shop or business" and at the same time carry out his major responsibility for teaching. Thus, he must be competent in the management of students.

Because vocational students may not be as highly motivated toward classroom instruction as they are toward shop and

laboratory work, classroom teachers must be especially creative and imaginative in order to stimulate and maintain student interest in related and general education courses. Teachers of science and mathematics courses must use every opportunity to relate their instruction and apply the principles involved to the students' shop work. Social-science teachers must use every opportunity to show that subjects like history, civics, and economics have many implications for the job-bound student and for his responsibilities in adult citizenship. Some schools offer a social studies course of particular interest to vocational students, such as a course in labour legislation; other schools include a unit on the labour movement in their regular social-science curriculum. English teachers, too, must seek and find ways to make literature and poetry have more meaning to students than a required credit toward graduation. Vocational education programmes do not deal with intangibles, and every part of the programme must contribute something useful to the student's occupational and personal goals. Perhaps this, more than any other factor, binds shop, laboratory, and classroom teachers together into an integrated and co-ordinated whole working for a common cause.

DEVELOPING THE CURRICULUM AND DETERMINING COURSE CONTENT

A shop or a laboratory teacher plays a key role in developing the curriculum and determining the course content for his training programme. For this role, he needs a basic understanding of procedures in curriculum development and revision, the ability to analyze what the worker does in the practice of the occupation, what the worker needs to know in order to practise his occupation, what is desirable or advantageous for him to know, and what attitudes he should possess in order to build and maintain good working relationships. The instructor who is recruited from the ranks of skilled workers in his occupation has the background and experience for this important responsibility. He also enlists the co-operation of employers in determining what is expected of an employee at the level of employment for which the instruction is to be given.

DEVELOPING INSTRUCTIONAL MATERIALS

To meet the training objectives of a vocational education programme, instructors need a wide range of instructional materials to guide students in their practical work and study assignments. Textbooks per se are but a small part of the instructional materials required in occupational training programmes. Textbooks generally lend themselves better to laboratory and classroom instruction than to shop training, and both basic and supplemental texts are used effectively in the more formal aspects of the programme. However, textbooks have not been written for many occupational training areas, and frequently, available texts soon become obsolete through technological change. Moreover, vocational education programmes require a variety of instructional materials especially designed for use in individual teaching; hence, in addition to textbooks and other published information suitable for group instruction, teachers need to provide job instruction and operation units for skill training on an individual basis, lesson sheets or study guides for technical instruction, and information units to implement the job-instruction units and study guides.

Many vocational education teachers are required to develop their own instructional materials. This involves writing, illustrating, editing, and duplicating written instructional materials and constructing model mock-ups and other aids. In some instances, available instructional materials are purchased for teachers, in which case they adapt or modify them to meet their particular teaching needs.

Because skill development depends to a great extent on how successfully the student visualizes, understands, and practises the techniques, processes and operations involved in the performance of a particular job, the field of occupational instruction is ideally suited for the use of visual materials. Films, slides, illustrations, charts, mock-ups and scale models are examples of the visual aids which vocational education teachers must know how to use effectively. Of equal or even greater importance is the teacher's ability to create and to develop the kind of teaching aids that will enhance and strengthen his own programme.

COUNSELLING TRAINEES

Teaching in vocational education areas involves more than good instruction. The nature and physical setting of vocational education fosters a close relationship between teacher and student and consequently, the student is likely to share his job, educational and personal problems with the teacher. Thus, the vocational teacher has opportunities and responsibilities for counselling. This does not imply that vocational teachers are always trained counsellors or that their counselling activities are a substitute for professional guidance services. It does mean that the vocational teacher who knows his students intimately their strengths and weaknesses, their aspirations and frustrations is in a unique position to provide the information and inspiration that will help them achieve their vocational objectives. Moreover, teacher counselling frequently continues in connection with the student's job placement and follow-up. The vocational teacher who has helped guide a student into and through an occupational training programme helps guide him into employment upon the completion of training. Finding the right job for the right worker, placing him in the job, and maintaining contact with him and the employer to evaluate progress and to provide additional assistance if needed, these are important parts of the vocational teacher's follow-up responsibilities. Often these responsibilities must be carried out after school hours and on Saturdays.

STRENGTHENING INSTRUCTION THROUGH PRODUCTION

One of the motivational forces in vocational education stems from the use of production or service jobs as vehicles of shop instruction. Real jobs in vocational shop-training should not be confused with projects in industrial arts classes which are usually avocational and exploratory in purpose and nature. A "live" job can be an excellent teaching-learning medium and is used in preference to a pseudo-job or exercise work. However, care must be exercised in the selection and utilization of live jobs. Teachers must choose the kinds of jobs that fit into the occupational curriculum and enhance the learning process. Administrative policies may also have

a bearing on the use of real jobs or certain types of real jobs. Most important of all, however, is the teacher's responsibility to see that real jobs do not replace instruction with production.

Lack of adequate materials and tools may place some limitations on the use of actual jobs, but vocational teachers are frequently able to overcome this handicap by enlisting the interest of local industries or businesses in contributing some of the materials and tools needed for this phase of the instructional programme.

ESTABLISHING THE SAFETY CONCEPT

Developing student attitudes toward safe practices and safety consciousness in job performance is an important facet of the vocational education programme, be it agricultural, business, distributive, home economics, trade and industrial or technical education. Safety in the use of tools and the operation of equipment is emphasized throughout the instructional programme. It is taught by precept and example, by demonstration and practice, by close supervision, by lectures and visual aids, and by special techniques used successfully in business and industry to promote and maintain safety.

THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

REPORT OF THE

COMMISSIONERS OF THE

UNIVERSITY OF CHICAGO

1892-93

PART — VII

NEED FOR PLANNING VOCATIONALISATION OF EDUCATION

- Aims and Objectives of Vocationalisation of Education
- Vocationalisation of Education and Manpower Needs
- Vocations for Urban Schools
- Occupations for Rural Students
- Need for Comprehensive Educational Planning
- Steps in Planning Vocationalisation of Education
- Role of Voluntary Organisations

1. A plan may be considered as a blueprint of carefully considered workable scheme to accomplish what the policies lay down. It is essentially a scheme drawn up in advance of implementation. Thus planning vocationalisation is also an advance scheme in broad but well-defined framework in terms of well-identified elements interlinked with one another. The framework itself is determined by the National Policy statements which take into account the national aspirations and the national goals. The goals and aspirations, in turn, depend upon the present state of quality of life of the society, its prevailing socio-economic conditions, the future the society pictures for itself and the means through which it can achieve the goals. the obligation of the Government to the society in achieving them and the obligation of society towards national goals. Vocationalisation of Education is a policy of the Government whose outlines are now fairly clear but the scheme in operational terms seems, at least for the present, quite formidable, none-the-less it is capable of achievement given the good-will of all and a determination of the Government. The plan discussed here will be confined to the Higher Secondary stage, which is popularly known as +2 stage.

AIMS AND OBJECTIVES OF VOCATIONALISATION OF EDUCATION

2. Excluding a small percentage of students, who after passing 10th standard examination join vocational institutions and another small percentage who drop out, the rest generally seek admission to the general streams such as Science, Humanities and Social Sciences in the Higher Secondary Schools/Junior Colleges/Intermediate Colleges. The major aim is to acquire a university degree a **status symbol** in society. After completion of the university education, inevitably the problem of employment arises in starker form and as they have not acquired any special skills or competencies, the em-

playing agencies find it difficult to employ them in jobs which demand special skills. They are even less prepared for self-employment. The result is frustration.

3. On the other hand, in the present state of development, there are a large number of employment opportunities — wage as well as self-employment — for which **there are no suitably qualified persons** with appropriate skills, knowledge and competencies. The existing vocational institutions have not diversified their programmes to meet such requirements. Further, enrolment capacities cannot be increased to accommodate the new streams with the existing infrastructural facilities. To add to this, these **institutions have grown into an inflexible traditional system** and hence are mentally not prepared to take in the new ideas. Therefore, to meet the national needs of trained manpower and also to divert a large section of students from purposeless and irrelevant university education to a variety of gainful vocations, the Kothari Commission recommended introduction of vocational streams along with the traditional academic streams at the Higher Secondary stage. In other words, it recommended **two distinct streams at the Higher Secondary or + 2 stage**, one preparing students through a 2-year programme for university education and the other through vocational courses of various durations ranging from 1 to 3 years or more according to the requirements of students, their socio-economic conditions, inclinations and the requirements of the society. Such products can perform a large number of middle level jobs which now are being performed by the university graduates.

4. A majority of such courses, the Commission recommended, should be terminal in the sense that higher secondary education also is terminal for many students.

For those who have aspirations to improve their career, special further educational facilities should be provided through in-service or non-formal courses, so that they are enabled to claim higher jobs in their own fields. Such facilities must be available in all major areas of vocations such as agriculture, medicine, home science, commerce, technology and other services.

VOCATIONALISATION OF EDUCATION AND MANPOWER NEEDS

5. Since vocationalization has the main aim of preparing our young men and women for occupation — self and wage, the major feature of planning should be to estimate to a reasonable degree of reliability the employment potential and manpower needs in the existing stage of economic and social activities and to some extent the future needs if the development programmes proceed at the present rate. It is, therefore, **not enough** if the details are collected from Government and public sector undertakings only but it is necessary to ascertain them in the private sector, organised and unorganised also. For educational planning to be meaningful, such figures obtained must be carefully shifted and a conservative figure will have to be arrived at after giving a good margin for possible failure of development plans or their non-implementation. **A period of about 10 years may be kept in view for manpower preparation** as longer duration may distort the whole estimation and thus render it unreliable and useless.

6. The enrolment in the 10th standard during 1977-78 was about 28 lakhs. Ten years hence it is expected to reach a figure of about 35 lakhs. If it is assumed that all these students take the examinations and about 60 per cent as the pass percentage, during 1978-79, we should expect about 17 lakhs and in 1988-89 about 21 lakhs of students leaving the high schools. The existing admission capacities of the ITI's and Polytechnics are 1 lakh and 50,000 respectively and are likely to be frozen at these levels for the next 10 years. The para-medical schools account for an additional admission of 52,000 at the present capacity. We may make an allowance for another 50,000 who may be directly entering apprenticeship training and are benefiting from other training agencies. We may also assume about 2 lakhs to drop out voluntarily after 10th standard. **Thus there will still remain about 12.5 lakhs of students to knock the doors of higher secondary schools/Junior colleges/intermediate colleges during 1978-79.** A possible figure for 1988-89 will be about 16 lakhs; our immediate concern to solve this problem should be to plan for diversion of about 40 to 50 per cent of students, urban and rural, to vocational streams which have a high employment potential.

7. We have in all about 9,700 higher secondary schools/Junior colleges/Intermediate colleges in the country among which the majority of them have admission capacities of less than 100 and there are others/whole enrolments are over 500. Almost all of them are located in the urban or semi-urban localities. The rural areas are practically starved of higher secondary education facilities, let alone technical and vocational training facilities. The result is a continuous migration of students from villages to towns and cities; thus swelling the urban student population with consequent student problems.

8. It is also distressing to note from the Third Educational Survey that urban and semi-urban population contribute about as many students as the whole of the rural population while the latter account for 80 per cent of the total population of the country. This is an indication of how education today is essentially urban-oriented and how little attention is paid to the education and training of the rural masses which are the backbone of the country's economy. In many parts of the country it is difficult to find a high school within a radius of 10 kms. Therefore, there is great urgency to provide adequate educational and training facilities to the rural population with a minimum financial burden on the families.

9. It is even more distressing to note that the number of girls who are pursuing education at this stage in urban centres is about double the number of girls from the entire rural areas. While the social structure of the urban population has encouraged women's education, the rural atmosphere is still burdened with taboos and age-old traditions. Lack of facilities in their neighbourhood for education and training are acting as greater deterrents. This also has to be remedied if our rural women have to benefit from appropriate education.

VOCATIONS FOR URBAN SCHOOLS

10. It is well known that most of the industries, commercial organisations, government offices, major educational and health institutions, law courts, railway, defence, postal departments are located in and around big cities in general and towns in certain cases. Therefore the types of competencies, services, their nature and quality will depend upon the acti-

vities in the above. As modern science and technology progress, more and more sophisticated skills, competencies and knowledge are needed. The commercial organizations which depend mostly upon the industrial, financial and distributive activities need a host of competencies ranging from clerical work to high level managerial and administrative functions. Further the Government offices, the courts of law, the legal profession and the educational institutions need a large number of secretarial personnel. The hospitals require a large army of para-medical workers besides those needed by the private nursing homes and dispensaries. The railways, the defence department, the public works departments, the municipalities, the electrical departments, the industries and others require job competencies at middle level in a variety of occupations numbering about 2500 today. On top of all, the urban population itself needs services commencing from repair of taps to repair and maintenance of a variety of domestic appliances and other services such as laundering, dress-making, hair dressing and so on. Of these bewildering types of services, the polytechnics, ITIs, nursing schools, pharmacy schools, private commercial institutes etc., are supplying only a small number of services. Because of bad planning and overproduction of trainees in these small number of skills, the products from these schools are facing unemployment problems today. **The fact is that we are turning out certain types of labour force in a much larger magnitude than what we need and at the same time there are a large number of jobs for which there are no trained personnel with the requisite competencies.** Therefore, there is great need for realization that the system of education and training must be diversified to meet the challenges of today and be prepared for fresh ones a few years later.

OCCUPATION FOR RURAL STUDENTS

11. The occupations suited to rural student community must be intimately related to agriculture, agro, small and tiny industries, distributive services, health and education. In agriculture, application of scientific methods of farming, rais-

ing cash crops such as vegetables, spices, coffee, tea, mulberry etc., hold a good potential for employment. Food processing and preservation, seed production, supply of agricultural equipment and tools, repair and maintenance of tractors, tillers, pumpsets, tubewells; house construction, electrical wiring and installation; road transport repairs and maintenance have a growing employment potential. Rural electrification has enabled villagers to use many domestic electrical gadgets which require certain servicing facilities. Good roads have helped the villagers to make use of road vehicles in increasing numbers which again require servicing facilities.

12. Rural health schemes have assumed great importance. Health centres are likely to be increased in number and demand a host of para-medical services such as of nurses, opticians, dentists, pharmacists, multipurpose health workers and so on.

The emphasis on transferring small and tiny industries to the rural areas opens up a wide vista of employment potential for technical and related occupations. Self-employment potential also grows opening up new fields for entrepreneurship.

NEED FOR A COMPREHENSIVE EDUCATIONAL PLANNING

13. As discussed in the foregoing paragraphs, the characteristics of occupations that are currently existing and those which are likely to arise in the near future are distinctly different for urban and rural segments of population. Gradually this distinction will have to disappear through improvement of the quality of rural life. This can be achieved only through appropriate measures to provide education and training according to the needs and also by adopting enlightened administrative measures. More high schools, higher secondary schools, vocational institutions in a variety of subjects should be created in the rural setting with adequate facilities such as buildings, equipment, good teaching staff, hostels for students and residences for teachers and so on. Therefore the future plan for vocational education should take several steps before it is put on ground.

STEPS IN PLANNING VOCATIONALIZATION OF EDUCATION

(1) Vocational Survey

14. As stated earlier, vocations which have reasonably good potential for employment in the existing conditions of economic and social activities and possible potential in emerging conditions have to be carefully identified and assessed before instituting vocational systems in the urban as well as rural areas. A convenient unit where such assessment should be made may be revenue district or a group of continuous districts if conditions are more or less similar in them. This assessment can be made through a simple but meaningful survey in the district or the group of districts. The characteristics of such a survey should be:

- (a) to collect reliable data regarding present pattern of occupations, their kinds, skills and competencies expected, their depth or level and the possible number required to meet the demand;
- (b) to identify the schools which have good reputation for academic excellence, financial stability and also have the necessary infrastructural facilities in terms of laboratories, workshops if any, good library, farms, sports ground, a band of competent teachers to teach the languages and general subjects and is administered by an enthusiastic management and the head of the institution;
- (c) to assess the community resources which the institution can draw upon for practical training and part-time teaching, the possible student response to the new courses in sufficient numbers and the attitude of the local community towards the vocationalisation scheme itself.

15. After identifying all the above, a report should be prepared recommending the courses, the enrolment to each course and the number of courses that a school can conveniently and efficiently manage on a conservative basis. This is necessary especially at the initial stage of the experiment. It is also advisable to select fewer schools initially earmarking others

for subsequent consideration. A good figure for enrolment is about 20 to 25 per course and about 4 courses per good school.

(2) Curriculum Preparation

16. The district vocational survey data provide good information as to the selection of courses keeping in view their relevancy and employment potential. It also indicates the expected levels of competencies, the basic knowledge expected and the communication skills needed. Since our major aim is to provide education combined with skills to the required degrees and to divert students from the academic streams, it is **necessary to associate the future employing agencies in the preparation of the curricula.** The experts drawn from the employing agencies along with the academicians who will help in weaving the necessary theoretical content into the syllabus which is only a part of the curriculum. The method of instruction, the relation between theory and practice, their proportion so far as time allotment is concerned, the instructional material needed, the equipment necessary for institutional training, the facilities that can be utilized outside the institution, and finally the system of evaluation to be adopted to assess the student's attainments all go into the curriculum preparation. Therefore the Curriculum Committee must consist of experts in the area to advise and assist in the development of a balanced curriculum whose aim is to achieve the objectives set for the course. Each state then will have to set up a competent committee which should consist of experts of all shades and having an intimate knowledge of the conditions in different districts/regions. **The curriculum for each subject should be sufficiently clear and unambiguous so that the teachers understand the scope and level of training expected.**

(3) The System of Evaluation

17. The vocational courses being essentially practical in nature, the students' achievements and progress have to be assessed continuously, if possible day by day. Fortunately the practical subjects lend themselves for such assessment easily. Even the entire course could be divided into convenient units which are complete in themselves so far as particular skills are concerned. Therefore, it is possible to offer the courses in terms of units or modules and to adopt continuous assess-

ment of the work. Certain number of units can be completed in each term and the entire **term work or semester** work can be evaluated either in terms of grades or marks. Instead of examining the student's work once at the end of the year it can be done every semester and his grades or marks can be stored. Certain minimum units can be fixed for each semester and those who get the required grades or marks will be admitted to the next semester. The student also can interrupt his studies during the course but only after completing the semester he is studying in.

After completing the required number of semester courses, he will be awarded a certificate or diploma. A student can collect as many **semester courses or credits according to his needs**. Therefore, it is best to adopt the semester system and continuous evaluation for all vocational courses.

This requires advance planning of the curricula in **TERMS** of units or modules and build into them the continuous internal assessment system as also the system of certification. To guard against under or over-evaluation, a system of accreditation has also to be incorporated in each state.

(A) Building Institutional Resources

18. The resources can be classified as building, equipment including library and teaching faculty. So far as **buildings** are concerned, it is supposed that the school/college has adequate accommodation for the vocational streams as no increased intake is envisaged and out of the normal enrolment a certain percentage is diverted to vocational stream. Where new facilities have to be created, such facilities must be for para-medical courses generally. It is then necessary to build new schools in the vicinity of medical colleges/hospitals/primary health centres so that the equipment, expertise in these institutions can be effectively utilised.

19. The library generally should be expected to have adequate books and periodicals for the general courses already running. It is only in the special vocations chosen that books have to be added. Adequate funds should be made available on a recurring basis. It is not easy to equip them in one stage as suitable books may not be available in the market at one time.

20. As the vocations may have relevance over a short range of time, investment on expensive equipment should be avoided. However, basic tools and accessories together with inexpensive equipment should be allowed for.

For good practical work, the students should utilise the community resources such as local farms, industries, banks, co-operative stores, hospitals, health centres, polytechnics, ITI's, medical, engineering, agriculture colleges with suitable collaborative arrangements. This not only results in economy of resources but even in procuring expertise from the actual field.

21. The most important element in institutional development is the **faculty development**. It is not a simple matter to prepare teaching staff in a short duration of time in so many vocations with first rate practical experience and with adequate theoretical background. The traditional graduates are hardly suitable for the jobs and those who possess good skill and competence do not generally have adequate educational background. A compromise is needed. **While instruction in practicals has to be provided by an expert even without a good educational background, at least one teacher in each major area should have university education to correlate theory and practice in the school.** The experts can be appointed on part-time basis while the graduates can be appointed on a regular basis. When the vocational courses have to be discarded in preference to those which may have better prospects at a later stage, the problem of retrenchment of regular teachers will not pose problems. The regular teachers should be retrained suitably so that their services will remain useful even when new courses in the major areas are introduced. If need be, retraining of such staff should be arranged from time to time to enable them to keep abreast of new knowledge and developments in that area.

(B) Administrative Steps

22. What has been said in the previous section can be achieved to a measurable degree only when the administrative steps supporting the scheme are taken in an enlightened and imaginative way. Such steps should be taken expeditiously and should promote initiative and drive among the staff entrusted

with the task of implementation. The scheme itself may be very good; but if faltering or hesitant steps are taken at the initial stage and if the work is entrusted to those who lack vision and enterprise, instead of making the scheme a success, they may destroy the scheme itself. Therefore, the administrative set-up should be carefully constituted and after laying down main policies and principles, it should be left to exercise considerable freedom and discretion in decision-making at the implementation stage.

23. The main administrative responsibilities can be considered as follows:

- (1) Planning vocationalization as indicated.
- (2) Implementation of the scheme according to the plan.
- (3) Supervision, inspection, placement of the products of the schools/colleges.
- (4) Review and evaluation of the scheme periodically.
- (5) Financial allocations.
- (6) Co-ordination of the scheme among the various Ministries.

24. In all these, two agencies have to work in close harmony, namely, the Central and the State agencies. Obviously these agencies are the Governments of the States and the Centre. Generally, it is the Centre which enunciates the policies of the country and lays down the guidelines in broad terms for the States. The ministry which is concerned with the scheme is obviously the Education Ministry; but it does not have the proper expertise to plan, execute and supervise the scheme in the entire country. The Ministry itself needs sound advice of experts from various vocational fields and education to prepare the broad framework in terms of the aims and objectives, operational schemes, financial estimates, overall supervision, monitoring and so on. Therefore, the Ministry of Education should create an Apex Body at the Centre to advise, prepare plans, set the targets, indicate the financial responsibility, prescribe standards for the courses, accord recognition, award certificates and diplomas and to perform such other functions called upon to do. This Apex Body

may assume a status similar to the All India Council for Technical Education or the latter itself **can be expanded to include Vocational Education**. If this is not possible, then the Apex Body can be designated "National Council for Vocational Education" (NCVE) at the Centre. At the State level, similar bodies under the title "State Council for Vocational Education" (SCVE) should be created to carry out all the decisions or recommendations of the National Council. It is the State Council that will be awarding the certificates and diplomas meeting the national standards so far as the State is concerned.

25. At the Centre, the Ministry of Education should monitor the scheme according to the advice and direction of the N.C.V.E. The State Government in turn, should implement the entire scheme in all details as advised by the S.C.V.E. through the Directorate of Vocational Education. The financial allocations will have to be made by the Centre to the State Ministry of Education whose responsibility it will be to re-allocate to the institutions which have been selected according to certain well-defined norms. It should be seen that funds are made available to the schools at the beginning of the session and not too late in the financial year. It should also be the responsibility of the Directorate to see that the funds are utilised properly, the schools are equipped adequately and teachers — part time and full time — are appointed well in time.

26. Since the facilities available in the community have to be utilised for effective training at the minimum costs, cooperation of all the agencies and Government organisation has to be enlisted. The first thing to achieve is the inter-ministerial cooperation so that on-the-job training facilities can be arranged with mutual consultation and benefit. Cooperation of the private organisations is even more important for the success of the scheme. One way of achieving the latter is to encourage them by offering suitable tax rebates in lieu of the training facilities they offer. Any of the agencies — Government or private — may be allowed to adopt a school or two for the purpose of training. It is the business of the State Government to exploit the situation to the best advantage of the school and the collaborating agency. The administrative machinery, therefore, must adopt flexible principles to involve as many agencies as are possible.

ROLE OF VOLUNTARY ORGANIZATIONS

27. It is a well known fact that private and voluntary organizations are doing yeoman service to the country in various fields and especially in the field of education. Many such voluntary organizations can share the responsibilities with the Governments and render significant service to the country purely for the pleasure of it. Any vocationalization plan must make special efforts to make use of their services and if necessary strengthening their efforts through additional inputs. The suspicious attitude which often characterises the bureaucratic actions should give place to mutual trust and cooperation in harnessing the efforts.

Conclusion

Planning of vocationalization is a formidable and complex process. It involves careful estimation of the job potential in the existing situation and also the possible job potential in the emerging patterns of development. Vocationalization needs the support, cooperation and assistance of all strata of society for its success. In fact everyone in the society owes in a smaller or larger measure something to education, and therefore, education has the right to demand some service from everyone for the future of the young. No effort is too big and no contribution is too small in this national venture. This future of our youth depends much on the success of vocationalization.

PART — VIII

INTEGRATION OF HIGHER EDUCATION FOR EFFECTIVE VOCATIONAL EDUCATION

- How can we Propagate the New Ideas
(1) Motivation; (2) Centralised Examination is a Hindrance to Progress; (3) Teachers' Attitude is Most Important; (4) Multi-University; (5) Need for Functional Laboratories of Divergent Nature
- Change in Fundamental Outlook is Necessary
- Main Problems of Vocational Training
(a) Shortage of Staff; (b) Lack of Modern Media of Teaching;
(c) Shortage of Space and Equipment
- Synthesis of Institution and Disciplines
- New Aims of Higher Education

LIST - VII

LIST OF THE NAMES OF THE
MEMBERS OF THE COMMITTEE

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In India today, as almost everywhere else in the world, people are breaking with the limitations and the safeguards of the past. We are indeed mobilizing our resources without realising that the new age coming at us so fast is pushing us to the edge of a full revolution in human thought and action.

Like all revolutions, this one too is bound to bring dislocations, tensions, and perhaps crushing tasks. But though the risks are great, so are the rewards. The new age is ushering in the most exciting drama of all time. It is lifting the curtain to fresh, creative insight into the origin and essential nature of life, and of the universe we live in.

Most people will agree that in such a period, the education of all who can profit by it — to the limit of their abilities — takes on new importance. It is now more imperative than ever before to provide preparation of the highest quality for those who are to be nation's discoverers, innovators, and interpreters in every field of competence: in science and technology; in arts, religion and speculative thought; in trade, business, industry and the professions, and in public service and statesmanship.

In India, it is also felt simultaneously to be equally important to use higher education as means of building a general public of well informed, articulate citizens — men and women who are not only highly skilled but able to think for themselves, capable of choosing wise and responsible leaders to guide their national policies, and endowed with the taste and judgement to put proper values on the things of the mind and spirit.

This dual concern and two-pronged objectives have not yet moulded higher education in India since independence. But today under the impact of slowly rising tide of students, higher education is becoming more mediocre than ever before. Also as a result of mounting pressure of numbers, most edu-

cational institutions are undergoing grave difficulties in housing and financing, in providing fully qualified teaching staff and in maintaining good standards of scholarship.

It is now necessary to make the University a huge, comprehensive, and diversified system of higher education that would interact with society to the end that both would grow and develop in mutual support of each other to produce one of the world's great civilisations.

Sometimes, one sees in the University simply the instrument for transferring a certain maximum quantity of knowledge to the growing generation. But that is not right, knowledge is dead; the University, however, serves the living. It should develop in the young individuals those qualities and capabilities which are of value to the welfare of the nation. Also that does not mean that individuality should be destroyed and the individual becomes a mere tool of the community, like a bee or an ant. This has happened to a certain extent in the United States. The community should not have standardised individuals without personal originality and personal aims, as it would have no possibilities of development. On the contrary, the aim must be the training of independently acting and thinking individuals, who, however, see in the service of the community their highest life problem.

HOW CAN WE PROPAGATE THE NEW IDEAS

(1) Motivation

But how shall we try to attain this ideal? Should we perhaps try to realise this aim by moralising? Not at all. Words are and remain an empty sound, and the road to perfection has never been accomplished by lip service to an ideal. Personalities are not formed by what is heard and said, but by labour and activity.

The most important method of education accordingly has consisted of that in which the pupil was urged to actual performance. This applies as well to the first attempts at writing of the primary boy as to the doctor's thesis, or to the vocational training.

Behind every kind of achievement, there exists a motivation which is at the foundation of it, and which in turn

is strengthened and nourished by the accomplishment of the undertaking. The worst thing for any educational institution is to work principally with methods of fear, force, and artificial authority. Such treatment destroys the sound sentiments, the sincerity and the self-confidence of the pupils. It produces the submissive subject. It is comparatively simple to keep the institution free from this worst of all evils. Give into the power of the teacher the fewest, possible coercive measures, so that the only source of the pupil's respect for the teacher is the human and intellectual qualities of the latter.

The other motive, or ambition, or in milder terms the aiming at recognition and consideration, lies firmly fixed in human nature. With the absence of mental stimulus of this kind, human cooperation would be entirely impossible. The desire for the approval of one's fellow-men certainly is one of the most important binding powers of society. In this complex of feelings, constructive and destructive feelings coexist. Desire for approval and recognition is a healthy motive, but the desire to be acknowledged as better, stronger or more intelligent than a fellow being or a fellow scholar easily leads to an excessively egoistic psychological adjustment, which may become injurious to the individual and to the community. Therefore, the teacher and the school must guard against employing the easy method of creating individual ambition, in order to induce the pupil to diligent work.

(2) Centralised Examination is a Hindrance to Progress

When we get our thinking cleared up on the real nature of education, we should then be prepared to admit the two great fundamental reforms that are the answer.

The first of these reforms is to free teachers and students from the tyranny of examinations. True, steps are being taken to increase the so-called internal component. But still it is tyranny, external or internal. To a large extent the whole process of teaching is to get the pupils ready to pass the examination. As a matter of fact, rumour has it that many teachers do all sorts of tricks so as to raise the ratio of their personal success in the field of education judged solely by the results of these unacademic examinations which bear indeed, no relation to the future success of the pupil in life.

They are driven to these horrible methods by the force of public opinion and personal benefits. The parents do not judge the schools and the teachers by the development that goes on in the minds and hearts of the pupils that may be really preparing them for future living — successful or otherwise.

There is plenty of good material in the curriculum as it now stands, to do just this, provided the teachers are free to use this. The truth is that the teachers we have now — many of them at least — are not competent with their present training, to do the kind of "free-lance" teaching that is advocated here. They probably would not know how to use a curriculum to develop growing bodies, minds and souls. No calling could demand greater skill and ability. Professional educators and political leaders can speculate and talk till they are blue in the face about what ought to be done. It can never be done until we get the teachers with the ability and the vision to do it. It is only good teachers who can do it and nobody else.

(3) Teacher's Attitudes are most Important

The second necessary reform is to change the attitude of teachers in order to acquire the spirit of self-criticism. Most people are too proud to lay any blame at their own door. But self-criticism is the beginning of progress.

(4) The Multi-University

It is only then that the university and college can carry out their three pronged mission. In fact, it is worth the while making an attempt to rationalise the multiplying functions of the University.

The core of the University will be the intellect, and the application of it to all areas of life. We have to think of the University as the producer, wholesaler, and retailer of knowledge in its three phases, viz., research, teaching and extension. Since we are producing knowledge, we cannot escape service. Knowledge today is for everybody's sake. When it is accepted that the University community should have a soul, then it follows that the multi-university should have several souls.

If, therefore, we are talking of vocationalisation and professional courses, on a large scale, we must provide the teachers and the laboratories to practise these courses. One cannot

understand the existence of a commerce college without any commercial enterprise, or an institute of business management with no business of its own.

We have so far accepted only one profession, that of medicine where it is essential to attach a hospital to the educational institute. Even our engineering colleges are no different from other science and arts colleges, in-so-far as the actual practice of engineering, science or arts has no scope to develop.

One can work out the titles only of a large number of vocational or professional courses. That is not the problem. The problem is the facility to develop originality, and an innovation enterprise. Secondly, it is also essential for students to organise themselves in cooperative management of various types of technical and professional enterprise.

(5) The Need for Functional Laboratories of Divergent Nature

Merely starting vocational courses is merely repeating what we have done in arts, science and commerce, i.e. to increase the number of unemployable graduates who have not been trained for independent thinking. It would be useful to organise vocational or professional training, provided we also introduce a radical change in the style of teaching activities. The change can be described as "eliminating the cook-book". The experiments are not confined only to the four walls of the laboratory, but could be identified, designed and performed anywhere in the neighbourhood, may be in the industry, university, college, a hospital or a village.

Such a divergent laboratory offers the student the possibility of commitment and choice by making each experiment a changing experience. The student could, in principle and in practice, approach any expert outside the college or the university. The organisational changes necessary to accept these innovations are motivated by a desire to increase the student's freedom and hence, his development as an investigator. Such methods are necessary in all vocational courses which are expected to solve some of the problems of the society. The example of the energy problem could be cited in which case, courses on energy and the various ways to use different methods of conversion to useful forms must be tried

out under different settings. Such problems can only be tackled fruitfully by the logical extension of the divergent laboratory, viz., the project work.

Project work involves students in a single piece of research directed to obtain a desired solution to some specific problem.

A project is a very good way of inculcating the spirit of enquiry, discussion and applications of the different techniques and methods which the student has learnt.

CHANGE IN FUNDAMENTAL OUTLOOK IS NECESSARY

Are we able to bring about a new orientation in the objectives of the university is the basic question. We have been discussing and negotiating for nearly four decades now. At the end of these four decades of negotiation, the record is one of dialogue without decision, of decision without action, and of despair piled upon frustration. Universities and colleges have so far achieved institutionalised frustration in a good measure.

We have indeed now to start an era of vigorous experimentation, to bridge the chasm between lecture hall and fraternity house, between research laboratory and the playfield. We have to integrate the curriculum and the students' college work of the traditional type directly with the central issues in their lives and in their society, with a view to encouraging originality and creativeness, and to spurring both faculty and students to a new respect for learning. With the guidance of the enlightened faculty, students have to develop intellectual skills and principles that would lead to new ideas and discoveries. Without even thinking of returning to the rigid educational framework of the past decades, we have to use the traditional heritage to give cohesion and a sense of purpose to education.

The goals could be the same, but every college could bring out reform radically different from each other, strongly influenced by the rugged thought of reacting against authoritarian approach to education controlled by the tyranny of examinations' psychology. Every college has to discover the importance of learning by doing, and of original thinking, strong inner motivation and direct meaningful experience at

every stage of intellectual growth. The true purpose of education is to help the individual realise his possibilities, and to train him, not only to adjust to his society but to control and mould it.

Education cannot be separated from life, and since life is changing so fast that traditional methods of education become out of date very soon. The traditional methods of examination to which we are holding on steadfastly serve as a huge rock on which every educational reform gets smashed to pieces. It is now necessary to break this rock to pieces before we can move forward. This rock on the foundations of vested interests, which will have first to be destroyed, in order to make education a free, enjoyable and scintillating experience and a useful exercise for the good of the larger section of our poor society.

Despite the anguish of vested interests passing as so-called traditionalists, and there has been much, the extension of the university's role to include education in vocational and technical subjects, with an overtone of serving the society, cannot ever debase our academic coinage. Instead it will bring the application of high standards of objectivity and of systematic thinking to vocational and technological problems.

MAIN PROBLEMS OF VOCATIONAL TRAINING

A very serious and difficult problem in ushering in more vocational and technological courses is the current shortage, in a number of colleges, of highly qualified teachers, laboratories and workshops.

(a) Shortage of Staff

Regarding teachers, too many brilliant men and women have drifted away from an educational campus into financially rewarding professions eager to snatch them up. The present reasonably higher salaries will undoubtedly help to attract a greater number of outstanding people into college teaching and to hold the good teachers already there.

However, the teachers who exist today should be prevented from getting out of date which is happening at a very rapid rate due to the inactivity of teachers in keeping themselves

abreast of developments in their own subjects. There is a growing sense of complacency and taking recourse to less exertion by using trade union activities. There is no justification and valid argument for the teachers growing mediocrity.

(b) Lack of Modern Media of Teaching

The teachers training as well as that of students can be achieved if the college and the university combine more effectively to make greater use of the technical devices, advancing science has put at our disposal.

Radio and television, the most captivating of all new means of mass communication, offer arresting possibilities. It is no cure all, and it can never fully take the place of a dynamic classroom teacher — a very rare species indeed — nor compensate for the loss of close personal contact between the teacher and the taught. But as enrolments continue to rise and the demand for expert instruction in various types of vocational and technical courses presses harder, the fact is inescapable that, through the magic of radio and T.V., the usefulness of inspiring teachers need no longer be limited to the four walls of the lecture room or laboratory.

The radio and T.V. stations can carry many types of advanced courses including how to use the new mass medium which itself is a growing vocational field using technological knowledge in respect of both hardware and software. Interested teachers, at all scholastic levels, can greatly enrich and enliven their teaching with the help of these new tools. At the same time, by eliminating many routine duties, use of the new devices can release more of the teachers' time for the more vital part of the teaching task; to strengthen students' intellectual fibre; to stretch their creative powers, to broaden their human understanding; and to help them make sounder judgement, and a deeper sense of personal responsibility.

(c) Shortage of Space and Equipment

Regarding technical education and shortage of space, it is necessary to transfer all existing polytechnics to the control of the university so as to integrate all education into a well-united structure so that students and teachers can move freely from one discipline to another. This is not possible under the

present rigidity which segregates polytechnics from the purview of the university. Many students are not willing to go to polytechnics for diploma education since their value with a diploma diminishes considerably.

With the proposed integration, a great deal of duplication can be stopped at least at the district level. Secondly, the volume of material students must master today is immense — growing as man's knowledge grows. It is, therefore, fairly certain that colleges will soon be under strong pressure to cover more and more ground. If students are to receive adequate professional training in their specialities, and at the same time, get the essential well rounded general education, a useful synthesis of the polytechnics and the colleges under the university would bring about astonishing results in the development of vocational training with a sense of social and scientific responsibility with this multi-disciplinary approach. This will also avoid the nurturing the snobbishness existing in either sector.

SYNTHESIS OF INSTITUTION AND DISCIPLINES

Because of the need for engineers and scientists to keep abreast of the phenomenal advances of our day and to cross the frontiers of new knowledge — a massive program of synthesis of all institutions has to start in India. Someone has to take the lead. Attempts have to be made to integrate several scientific fields, to correlate these closely with other related fields with a view to developing a national utilization outlook, and to stir students' imagination in this direction, by giving them actual work experience in the areas of development.

Powerful forces in the world are making this inevitable. One of them is the automation, which eliminates dull and dreary jobs, but creates new jobs calling for skills, intelligence, and versatility of a high order. The second is the breath-taking rate at which knowledge is growing. It has long been too much for any one's mind to master. This has forced people to specialize, sometimes in their over narrow limits, and will no doubt continue to so. Yet, the experience of the past has shown that when specialisation is pushed too far, one ceases

to be 'educated' at all. Specialisation will perhaps have to be broken down and the burden more widely borne.

At the same time, a world of multiplying specialists will desperately need people who can see beyond their own jobs the larger issues. This is one reason why we should always try to build special education on a base of general education that has breadth and flexibility and multi-disciplinarity. There is also another reason which is more immediately practical. Our world is changing so fast that there is no guarantee that to-day's vocational speciality will be relevant tomorrow. Individual training, therefore, must be wide enough to help people survive the ups and downs of demand and to adapt themselves without too much difficulty to the new conditions that are sure to come a number of times in one's life.

The integrated university schools that I am advocating have to provide a firm foothold of general education while developing a high degree of some special competence in one or more fields in almost everybody. For this, we have to pack more and more information and training into all our graduates. The present centralised examination system is totally irrelevant to make such real education oriented towards the creation of personalities of graduates in the rapidly changing world. As time goes on, we may even find a way to raise the level of intelligence itself. It is known that the IQ is not unchangeable. It depends in a large measure on environment and background, and varies with one's changing moods and emotions. It has also been known to jump dramatically and permanently.

What makes it jump and how can it be made to do so? Can civilisation raise itself by itself, by its own bootstraps? Integration of knowledge along with the unity of all sciences might change the whole aspect of education more fundamentally than anything that has happened in the past thirty centuries. Perhaps this has happened in the vedic times, since the vedas seem to contain almost everything which we have lost by our negligence.

We are still teaching our children the way the Greeks taught theirs — only usually not so well. We have adopted it via Europe and England. Someday we are going to rediscover

our own real learning process, and when that day comes, India will really start getting somewhere in the world.

At this moment in the stormy evolution of higher education in India, what new demands are made on the college and universities? For one thing, people are asking for more new professions and semi-professions, with supporting programs leading to new degrees. It is necessary to start a planned development to provide an increase in graduates and professional education in general, and more advanced training for teachers in particular; more careful and complete search for talent and its utilisation, and more personalised guidance in placing so trained students into their proper occupational niches and continued emphasis on arts, science and technology with social relevance.

NEW AIMS OF HIGHER EDUCATION

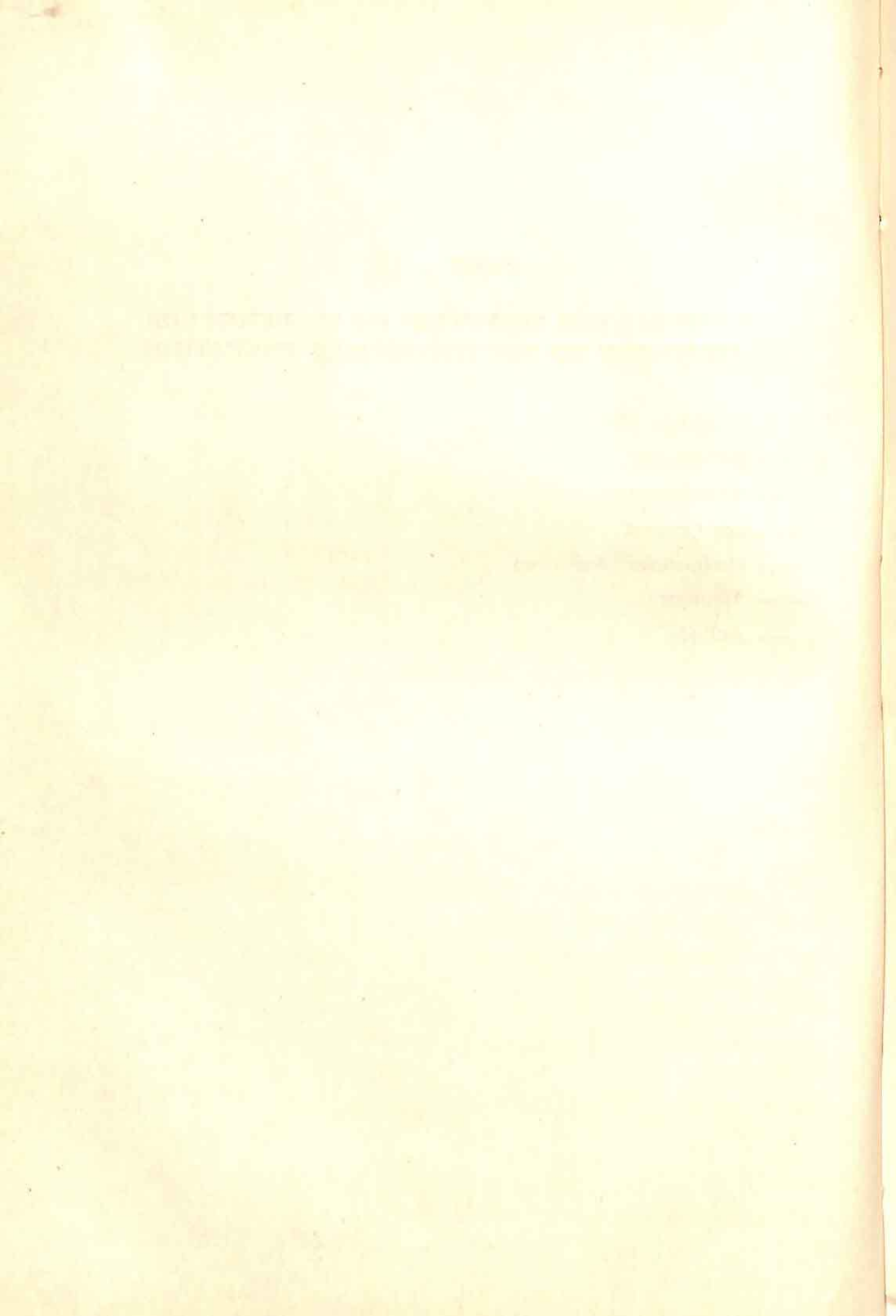
Our aim of higher education is to produce men and women who possess wisdom as well as knowledge; compassion as well as high personal standards; convictions as well as disciplined reasoning; sensitiveness to beauty as well as tough-minded ability to distinguish between the genuine and the counterfeit; individualism as well as willingness to work together with others towards a common goal. Our future does not lie in a retreat to lesser ideals. It lies in the enrichment and invigoration of what is already ours.

After all, as Einstein said, "Education is that which remains, after forgetting everything learned in the class".

PART — IX

CRITERIA FOR SELECTION OF STUDENTS FOR ADMISSION TO VOCATIONALISED EDUCATION

- Academic Motivation
- Self-Esteem
- Self-Identity
- Self-Concept
- Occupational Aspiration
- Adjustment
- Attitude



Vocationalization has, as its main objective, the change of the educational system from one which was oriented to knowledge for knowledge sake and clerkdom in the administrative field, to a process which specially prepares children for a wide range of avenues in work life. The goal is to orient pupils to a range of work areas in technical, commercial, agricultural, paramedical and other areas and to determine the range in response to local employment needs. The key concept of the higher secondary stage has become a diversification of pupil's choice.

The following variables should be kept in mind while selecting the students for vocational courses:

- (1) Academic Motivation;
- (2) Self-Esteem;
- (3) Self-Identity;
- (4) Self-Concept;
- (5) Occupational Aspiration;
- (6) Adjustment;
- (7) Attitude.

ACADEMIC MOTIVATION

Academic motivation is a concept which has been introduced to explain some of the differences in the school attainment of children with similar measured abilities. Children differ in their determination to succeed in their academic studies. Various attempts have been made to relate this 'academic motivation' to the more general personality trait of 'achievement motivation'. Academic motivation is the impetus to do well in relation to some standard of excellence. A person with a strong need for achievement wants to be successful at some challenging task not for profit or for status, but merely for the sake of doing well. Students with high motivation will not seek success in every situation. It

is only when they perceive that their performance will be evaluated against some standard of excellence that the motive to achieve will be activated.

One of the hypothetical processes involved in the determination of behaviour in addition to the effect of the stimulus or perceived situation, is the process of learning and certain other factors such as abilities. Whereas abilities primarily influence the yield or level of adoption of a specific pattern of behaviour, motivation determines its level of activation, intensity and consistency as well as general direction. (Encyclopaedia of Psychology 1972). Thus to find out how far academic motivation determines the level of intensity in vocational education in the students, many scales are used. One such scale is described below.

Pupils' Academic Motivation Scale

This tool is adopted by Sesai for Indian students from the original test by Frymier.

It was used as a measure of pupils' desire to succeed and the direction in which their ambitions lie. The questionnaire consists of eighty statements. The responses are collected on a four point scale. This scale included statements such as trusting other people, feeling of over one's life, about teachers and so on. Seven are included to measure the level of relationship of teachers with their students. Ten statements are related to students. The rest are about the youth in general, fifteen statements are about the society.

Reliability of the Tool

In order to arrive at the reliability level of the tool, a sample of 100 students belonging to ten schools, were given 'Public Academic Motivation Scale'. The test-retest method was adopted for establishing reliability. After one month, the same questionnaire was given to the same sample. The reliability level of the 'Public Academic Motivation' scale was found to be .71.

Validity of the Tool

Since it is a standardized tool, already used by many researchers in India (Thangam 'Sathyavathi'), it is valid to the present situation also.

SELF-ESTEEM

The International Dictionary of Education (1977) defines self-esteem as a person's judgement of the self-concept he/she has formed, estimate of whether his/her self-concept reaches his/her standards and values. It influences the attitude and behaviour of a person. If we do not like our idea of ourselves, we tend to become negative, depressed, etc. Individuals seem to have quite stable images of themselves and to have made value judgements about their own characteristics. Children low in self-esteem are usually more anxious, particularly about doing well in school, in sports, or in any other area. People who have poor self-esteem tend to be less effective in groups than are those with high self-esteem. Those who feel adequate are likely to take leadership roles, to contribute good ideas, and generally to provide stimulation and guidance to the group. In order to find out whether there is any influence of self-esteem on the vocational attitude of students the self-esteem scale can be used.

The Self-Esteem Inventory

This tool was adopted by Cooper Smith in 1967. It consists of twenty-five statements which measure evaluative attitudes of the respondents towards self in several domains and how positive or negative was their view on themselves. Twenty-five items were selected from the original pool of fifty items after item analysis. Items are answered either 'like me' or 'unlike me'. The statements included acceptance of self, relationship with other people, decisiveness. These statements included both positive and negative sentences. Four factors emerged from factor analysis — self-derogation, leadership, popularity, family, parents and assertiveness and anxiety.

Reliability of the Tool

By test-retest method the reliability coefficient of the tool was found out as .8. Hence it is proved that the tool is reliable to be used for this study.

Validity of the Tool

It was found to be .6 with Rogarberg scale for college students. But it is found to be suitable for all age groups.

SELF-IDENTITY

Each person has a sense of self and identity. A firm sense of identity is part of maturity and essential to any enduring, meaningful relationships of endeavour. Certainly it is something which constantly develops and changes from the womb to the grave and it corresponds to a person's self-concept (ABC of Psychology 1981, p. 120). Identity is defined by Charles Rycraft as 'the sense of one's continuous being as an entity distinguishable from all others. The self-identity scale can be used to find out the level of identity on a nine point scale.

The Self-Identity Questionnaire

This questionnaire is developed by Mannian in 1974. It was given to measure the student's social self-identity, academic, intellectual self-identity, vocational self-identity and reformer self-identity. It consists of sixteen statements. It is rated on a nine point scale to indicate as students how much they are like the persons stated in each sentence. They are asked to circle round a number ranging from nine to one. A circle round number nine or eight shows that they are very much like that person described in the statement. A circle round number one or two shows that they are not at all like that person described. Intermediate values show differing degree of likeness.

Reliability of the Tool

The reliability coefficient of the above mentioned tool was found to be 0.9 by test-retest method.

Validity of the Tool

As the tool is already developed by Mannian and is a standardized one, it is found to be valid.

SELF-CONCEPT

Individual's self-concept is considered as one of the most basic and crucial components of the personality. The self-concept of an individual deeply affects not only his relationship to himself but his relations to other people and the world at large. Positive high self-concept is required for healthy adjustment. A person who does not possess high self-image of

himself and has a deep doubt about his abilities, fails to establish better adjustment.

Self-concept develops gradually since the early childhood due to interaction between child and his total environment. Stagner (1961) points out that, "Self-awareness develops gradually as the individual recognizes the distinction between self and non-self". The awareness of self in children arises from the awareness of the physical body when he finds himself a continued unity and different from others in the environment. Self-concept develops as a concept which the individual has about his 'self', which consists of his attitudes, feelings and evaluations about himself.

Self-concept, in the words of Carl Rogers, is the 'organised conceptual gestalt (pattern) composed of perceptions of the characteristics of the 'I' or 'me' and the perception of the relationships of the 'I' or 'me' to others and to various aspects of life, together with the values attached to those perceptions. It includes perception of one's basic roles, traits and body image. A sense of self develops gradually throughout childhood, and in the framework into which all experiences are integrated. A threat is really an experience which is inconsistent with one's self-concept (The ABC of Psychology 1981, p. 205).

The Encyclopaedia of Psychology (Vol. III 1972), defines self-concept as the totality of attitudes, judgement and values of an individual relating to his behaviour, abilities and qualities. Self-concept embraces the awareness of these variables and their evaluation. Self-concept has been investigated by the use of the sorting method which distinguishes between first the real self-description and second discrepancy between this and an ideal self-description. (p. 185).

The term self-concept is used in studies of personality to describe, in simple terms, the picture or image a person has of himself/herself. Most writers stress its social nature. Zahran defines it as an 'organised, learned, cognitive and unitary configuration of conscious perceptions, conceptions and evaluations by the individual, of his self, as he actually is (perceived self) as others are supposed to see him (other self) and as he would most like to be (ideal self). Self-concept is important in learning and achievement. Hence while selecting the students for the vocational courses it is necessary to know whe-

ther the students have developed a proper self-concept. There are a number of tools which help us in finding out the self-concept of the students. One such tool is described below.

Self-Concept Scale

This tool was constructed and standardized by Mukta Rani Rastogi of the Lucknow University. This questionnaire consists of fifty-one statements to measure the self-concept of the higher secondary school students. The students were asked to make a tick on any one of the five responses given, varying from strongly agree to strongly disagree. It was helpful to know how positive or negative were their views on themselves. Out of these fifty-one statements twenty-two statements are positive from which the positive thinking of an individual about himself is clearly known. The remaining twenty-five statements are negative in nature.

Reliability of the Tool

As a result of the test-retest method, the reliability coefficient of the tool was found to be 0.8. Hence this tool can be reliably administered to this sample.

Validity of the Tool

As the tool is already standardised by Mukta Rani Rastogi, it is valid to the present group of public also.

OCCUPATIONAL ASPIRATION

The Encyclopaedia of Psychology (1972) defines that the level of aspiration is the possible goal (score) an individual sets himself in his performance. Hope (1930) traced personal achievement to the experience of success and failure; a specific action only becomes success or failure because of its relation to a momentary goal or norm which can serve as a yardstick for the action considered in the sense of achievement. The drop in self-estimation is expressed not only in the decrease in aspiration level but in considerable fluctuation or slow lingering process of selection.

According to International Dictionary of Education, aspiration is an ambition of an individual, in educational usage usually seen as academic, social or occupational and concerned with performance, prestige and status. Occupational aspira-

tion is concerned with the individual's aspiration to attain an occupation.

Occupational Aspiration Scale

The Occupation Aspiration Scale was adopted by Grewal. Level of occupational aspiration has been defined as orientation towards occupational goal (Haller and Miller 1963). A scale for measuring the level of occupational aspiration was developed by Haller and Miller (1967) to provide a scientific as well as a standardized procedure for measuring the occupational aspiration of the youth.

The present scale consists of eight multiple choice type items. Each item contains ten occupations nearly of all occupational status level arranged in a mixed order. The OAS asks for both short and long range realistic as well as idealistic expressions of the level of occupational preferences. Each of these four combinations, (i.e., idealistic short range and realistic long range) are assessed twice, thereby making the number of items to eight. The occupational titles for each item have been used only once in the scale. Students had to mark any one job depending upon their interest and preference in each list. The occupations included choice requiring training, craft skills, the mere technical job, jobs involving travel, wor-

*OAS FORMAT: Combination of Expression Levels and Goal.
Period for each of the Four Question-wordings.*

Expression Levels	Goal Periods	
	Short Range (S) (a)	Long Range (L) be
Idealistic (I)	Of the jobs listed in this question which <i>One</i> would you choose if you were <i>Free to Choose Any</i> of them you wished when your <i>Schooling is over</i> (2 and 4).	Of the jobs listed in this question, which <i>One</i> would you choose to have when you are 30 years old, if you were <i>Free to have any</i> of them you wished (6 and 8).
Realistic (R)	Of the jobs listed in this question which is the <i>Best One</i> you are really <i>Sure you can get</i> when your <i>Schooling is over?</i> (1 and 3).	Of the jobs listed in this question which is the <i>Best one you can have</i> by the time you are 30 years old? (5 and 7).

king the hand and so on. At the beginning of each list clear instructions were given.

The score of each item ranges from zero to nine. A score of 'nine' indicates that a job from among the highest eight prestige occupations has been preferred and a score of 'zero' indicates that one of the lowest eight occupations has been preferred. An individual's score for the whole inventory ranges from 0 to 72.

Reliability of the Tool

Coefficient of reliability as determined by test-retest method was found to be 0.86. The reliability coefficient found by Grewal for this scale was 0.84.

Validity of the Tool

The OAS has been validated against Haller and Miller Occupational Aspiration Scale. The coefficient of validity was found to be 0.75.

ADJUSTMENT

It is true that life is nothing but a process of adjustment from one moment to the other. The process of adjustment goes on from the moment one comes into this world until one departs from the scene. Every moment, the human being is subjected to various situations, as a result of which he is confronted with many conflicts and he is in the process of adjustment at every moment of his life.

The biological view of adjustment would emphasize adaptation for survival while a narrower view of it would be adaptation to need reduction as Lehner (1964) puts it. The efforts the individual makes to adapt himself to the environment to overcome frustration in achieving gratification of his needs may be called the adjustment process. The process of adjustment is affected and modified by the individual's experiences. This learning plays a significant part in aiding adjustment.

Learning both inside and outside the school is an important factor in the process of adjustment. Academic success mainly depends on how an individual is able to cope with the situations of the school. This is referred to as Academic Adjustment which implies the abilities or processes by which the

demands and requirements of academic life are fulfilled in an adequate, wholesome and satisfying manner.

To be a good student, it is necessary to achieve first of all, a high level of personal adjustment in which problems of physical, emotional, social, moral and spiritual nature are reduced to a minimum.

Students who are continuously in conflict with parental demands and restrictions and who consider their home only as a prison of security and affection will find it difficult to successfully manage their academic life. Secondly, students who have failed to reach a satisfactory level of social adjustment will have difficulties in school. They will have to face frustration and conflicts with the peers and teachers.

Maladjustments in the above areas cause too much emotional upheaval, too many frustrations and conflicts which stand as an obstacle in the path of intellectual effort, concentration, habits of study and sincere academic interest. This leads to lack of control over emotions and results in emotional instability. Adequate personal and social adjustment and ability and willingness to learn to meet the requirements of home and school are of fundamental importance to academic success. Usually, one's way of behaviour clearly reflects the type of adjustment one has been able to achieve. For example, well adjusted individuals interact with each other in a mutually satisfying manner, whereas the maladjustive behaviour patterns indicate the onset of psychosis or neurosis.

Since the problem of adjustment occurs in every moment of our life, it is pervading the whole life. There is no single area in our life where there is no adjustment problems. Some of the areas of adjustment are:

- (a) Home adjustment,
- (b) Emotional adjustment,
- (c) Social adjustment,
- (d) Health adjustment,
- (e) Personal adjustment,
- (f) Academic adjustment,
- (g) Psychological adjustment,
- (h) Job or vocational adjustment,

- (i) Adjustment to leisure,
- (j) Old-age adjustment and so on.

Hence while selecting the students for the vocational courses one should see that the person is a well-adjusted person. There are several scales to find out different kinds of adjustment. One such scale is the Students Adjustment Scale.

Students Adjustment Scale

The scale was adopted by Thangam from sister Maric de sales, A.C's Research, 'CASE', M.S. University, Baroda.

This scale consists of statements on various headings. Adjustment with the class teacher consists of thirty statements, of these the fifteen odd numbers are positive statements and the remaining fifteen even numbers are negative statements. The ten statements under the heading adjustment with the head of the institution consists of five positive and five negative statements. The other headings, adjustment with classmates, with subjects, in the classroom and in the schools also have ten questions each with positive and negative statement mixed together. The students were asked to round the number near the statements 'which they liked the best. Then from the marked statements they have to select any five statements which they consider most appropriate and have to write their order of preference under each heading. The statement covered such issues as interest in or enjoyment of lessons, usefulness of school in a broader context, characteristics of teachers in general, feelings of loyalty to the school and the contributions they felt the teachers were making for the development of students, adjustment with the classmates and with the school subjects.

Reliability and Validity of the Tool

To establish reliability of the tool the test-retest method was adopted. By this the reliability coefficient was found to be 0.73. As it is a standardized tool already, the tool is a valid one.

ATTITUDE

In The Encyclopaedia of Psychology (Vol. 1, 1977), it is stated that an attitude is normally a perceptual orientation

and response readiness in relation to a particular object or class of objects.

"Attitude is a tendency to react in a certain way towards events; people, ideas or objects. Attitude has three components, thoughts or beliefs (cognitive), feelings (emotional) and behaviour". (ABC of Psychology, p. 27).

In the International Dictionary of Education it is defined as the pre-disposition to perceive, feel or behave towards specific objects or certain people in a particular manner. Attitudes are thought to be derived from experience rather than innate characteristics, which suggest that they can be modified.

"Attitudes are emotionally toned ideas directed towards or against something" — Morse and Wings.

"An enduring system of positive or negative evaluations, emotional feelings and pro or con action tendencies with respect to social objects".

Attitudes are a sum of many inclinations and feelings. Prejudice or bias, pre-conceived notions, ideas, fears, threats and convictions about any given topic.

Attitude scale measures the personality, which attempts to place an individual somewhere on an agreed continuum with respect to a specific attitude. Attitude scales in fact tend to be used by yield quantitative measures of traits or more general personality responses. The vocational attitude scale attempts to place a student somewhere on an agreed continuum with respect to vocational attitude.

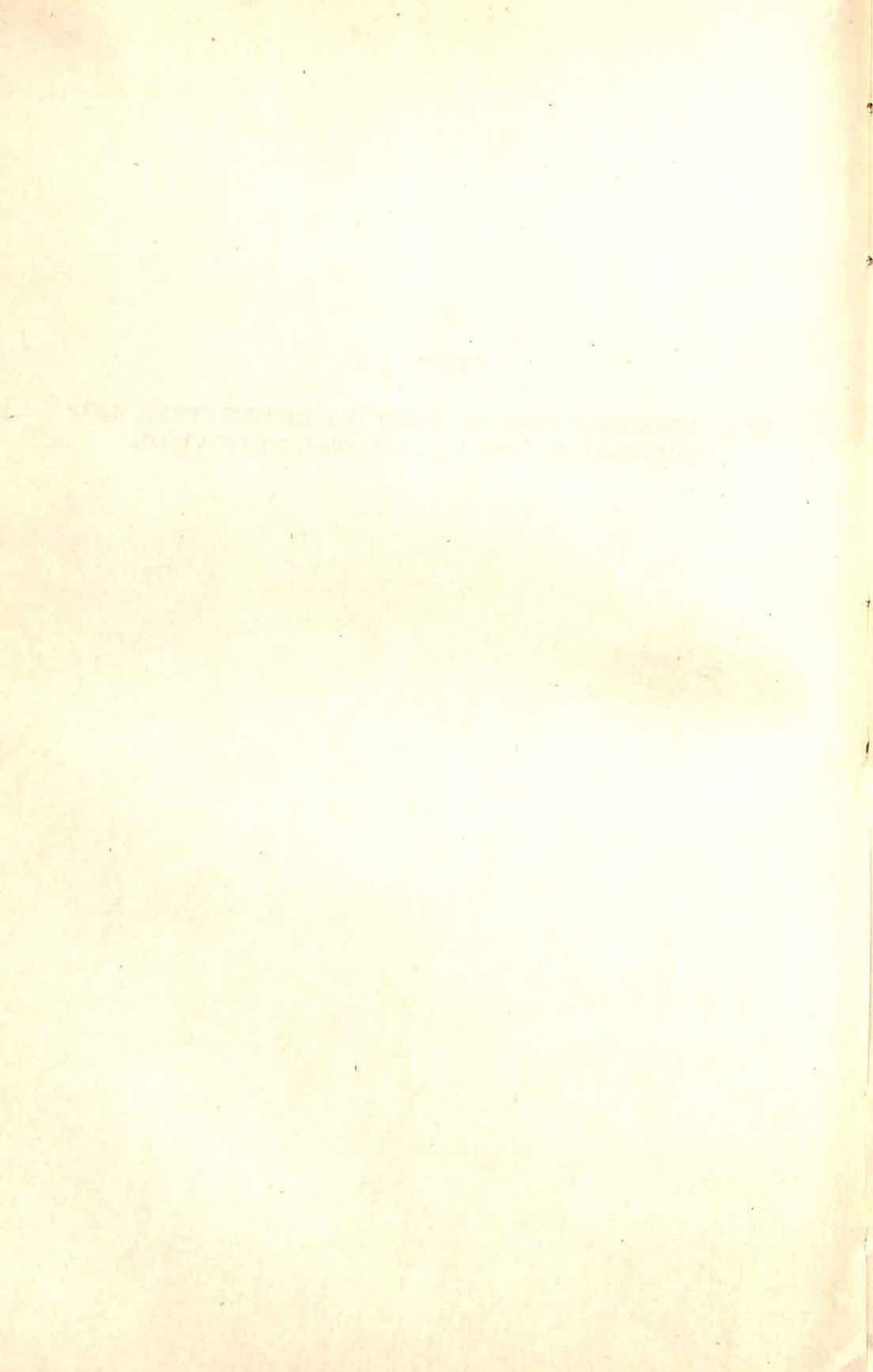
Vocational Attitude Scale

To assess the degree of acceptance of the new system as revealed by the attitudes of pupils, teachers and parents a 'Vocational Attitude Scale' was constructed with forty statements. Each statement had five category responses such as strongly agree on one end and strongly disagree on the other end.

The test-retest reliability coefficient of the tool was found to be 0.9.

PART — X

**RECOMMENDATIONS OF VARIOUS COMMITTEES AND
COMMISSIONS ON VOCATIONAL EDUCATION**



Vocationalisation of secondary education has now become the accepted policy of many countries, both developed and developing. A number of Commissions and Committees, international and national in outlook, have emphasized the need for vocationalising education, particularly at the secondary stage. A brief review of the recommendations of the various committees and commissions is first made and then the functioning of vocational education programmes in some industrially developed nations is reviewed. The brief reviews are followed by reference to studies on vocational education.

A number of committees and commissions have been formed from time to time to consider the prevailing educational system and to make recommendations for progress.

It was first recommended even in 1882 by the Indian Education Commission or the Hunter Commission that the curriculum of the secondary education should be split up into A and B curriculums, curriculum A to have subjects that were to be useful for higher studies and curriculum B to have vocational occupational and practical subjects.

The Hartog Committee (1929) recommended that more boys should be diverted to industrial and commercial career at the end of the middle stage. Provision should be made for alternate courses in that stage, preparatory to special instruction in that stage, preparatory to special instruction in technical and industrial schools.

The Sapru Committee (1934) recommended diversified courses at the secondary stage, preparing students for university education and providing vocational education.

Writing about the reorganisation of vocational and industrial education, the Abot and Wood Report (1937) recommended that the nature of vocational education should be determined by the prevailing circumstances in view of the multi-various needs of the locality. They observed that the technical education should keep pace with industrial deve-

lopment of the country in order to check all possibilities of unemployment. Abot held that like general education, technical education also brings about a harmonious development of physical, mental and spiritual aspects of personality. The committee also recommended the establishment in each province of Advisory Council for vocational education. It recommended the establishment of agricultural and polytechnic schools. The establishment of a Vocational Training College at Delhi was also recommended. The Wood-Abot report fulfilled a special demand considering the circumstances and substantial needs of the country.

The Sargent Report of 1944 recommended that the high schools will be divided into two classes, (i) Academic high schools, and (ii) Technical high schools. In the second type of schools vocational and commercial subjects will be taught. Provisions should be made for technical, commercial and arts education for full-time and part-time students.

The Secondary Education Commission (1952-53) suggested ways and means of reform and reconstruction of Secondary Education in the country. It recommended that multi-purpose schools should be started to provide varied courses of interest to students with diverse aims, aptitudes and abilities. Technical schools in industrial areas and agricultural schools in rural areas should be set up. It suggested the introduction of diversified courses of instruction for the pupils. In the opinion of the commission the diversified courses should begin in the second year of the high school or the higher secondary school stage. The commission's recommendations do open up a new area of reconstruction and reform of education at the secondary stage.

The views of the Committee on Emotional Integration was in favour of having two stages of education — (a) the high school stage of general education without much specialisation, and (b) the higher secondary stage with provision for specialisation. The higher secondary stage should include vocational and semi-vocational courses in which the students can specialise on the experience gained at the high school. Specialisation in academic and vocational subjects will be more practical in the two year period.

The Indian Education Commission 1964-66 recommended:

(1) A broadly uniform pattern of education, (2) Extension in the total period of schooling to bring about a general rise in the standards of attainment, and (3) Vocationalisation of education. Polytechnics are to be located only in industrial areas and those in rural areas should give priority to agriculture and agro industries, alongside polytechnics, clerical, scientific and industrial trades and in areas of special interest to girls.

The conference of Education Secretaries and Directors of Public Instruction held on 15th and 16th September 1972 passed the following resolutions. Adoption of a uniform pattern of school and college classes (10 + 2 + 3). The scheme of vocationalisation of education as well as work-experience deserves the highest priority in the plan and should be assisted fully.

The greatest event of the nineteen seventies is the release of the report of International Commission on Education and Development (1972) under the auspices of UNESCO. The Commission critically assessed the educational situation in 1972, that is, "looking at the world as a whole, to try to discern common features, many of which can only be accounted for in terms of the past, like the new trends which seem to be emerging in most countries and systems ...". According to the Commission rigid distinction between different types of teachings — general, scientific, technical and professional — must be dropped and education at primary and secondary levels must become theoretical, technological, practical and mental at the same time. Professional and technical training colleges must be developed in conjunction with the secondary education system. The instruction they give must be followed by practical training at place of work, all of which must above all, be completed by recurrent education and vocational courses.

In June 1977, the committee headed by Shri Iswarbhai J. Patel recommended that socially useful productive work must find a central place in the school curriculum. This should be given the status of a full-fledged subject for the award of certificates at the end of Class X.

Adiseshiah Review Committee (1977-78) submitted a report which was entitled as 'Learning to Do' — towards a learning

and working society. The major recommendations of the National Review Committee may be listed as under: (1) Work-based learning: Learning must be based on work either through what the Iswarbhai Patel Committee calls socially useful productive work or through vocationalised courses. (2) Vocationalised courses: Vocational courses should be in agricultural and related rural occupational areas and in managerial, commercial, health and paramedical vocations and not through opening vocational courses at this level in the manufacturing, industrial and engineering occupations. There should be flexible streaming of courses.

The higher secondary stage should consist of both general educational spectrum and vocationalised spectrum. The Committee recommended for the setting up of National Council of Vocational Education and all agencies such as the Indian Council of Agricultural Research, All India Council for Technical Education, the Nursing Council, the Dental Council, etc. should be members of this apex body.

Under the Sixth Five Year Plan it was proposed to regulate enrolment in the general academic stream of higher secondary education and higher education and to shift the emphasis to vocationalisation at the secondary stage.

PART — XI

VOCATIONALISATION OF EDUCATION IN OTHER COUNTRIES

1. United States of America
2. United Kingdom
3. Japan
4. Denmark
5. Philippines
6. New Zealand
7. Australia
8. Soviet Socialist Republics
9. Thailand
10. Malaysia
11. Singapore

1. VOCATIONAL EDUCATION IN THE UNITED STATES OF AMERICA

The American Vocational Association has defined vocational education as, "education designed to develop skills, abilities, understandings, attitudes, work habits and appreciations needed by workers to enter and make progress in employment on a useful and productive basis".

Vocational education has its parallel with each stage in the development of man. It was added to the curriculum of the public education system, however, less than a hundred years ago to meet particular social conditions. As technical advances were made in American society, advances or rather changes were made in vocational education and in its purpose. It changed from being primarily concerned with the developing man to giving man the technology that he needed to fill on existing unfilled job that society needed.

Vocational education is a formalised vehicle in the American society that facilitates the allocation of occupational roles. As such it is an extension of those social mechanisms that differentiate persons within the community and prescribe the types of stations and roles that they are expected to assume. Vocational education is usually the only link between educational institutions and the institutionalised labour market.

Vocational education was an instrument of national manpower policy in the later 1960s also and it is projected to continue to be so into the 1970s. The Vocational Education Act of 1968 is significant both for its expansion of Federal Investment and its redirection of vocational education efforts. As in India many committees and commissions were set up to execute the programme of vocational education.

- (1) Commission on National Aid to Vocational Education 1914;
- (2) The Advisory Committee on Education 1936-38;

- (3) Panel of Consultants on Vocational Education 1961-62;
- (4) The Advisory Council on Vocational Education 1968.

Vocational education in U.S.A. is vast in scope and is characterised by a great variety of types of units and areas for instruction. Some of the units are public, others are private. Public units of vocational education include vocational education in agriculture, business distribution, health, home economics and trade and industries. Non-public vocational educational programmes refer to those programmes offered by private industries to update the training of their employees and to private schools that provide specific occupational training. Private vocational education also includes the many private post-high school institutions that offer specific training. Beyond high school those who desire vocational education can experience these programmes in a continuing variety of institutions. Trade, industries and vocational schools, area vocational schools, junior colleges, community colleges, penal institutions, proprietary schools and four-year colleges, all have vocational education programmes.

"Career Education within the schools can build on established areas. Vocational education despite faults, is by far the most advanced and sophisticated of existing career education programme. The first step forward should be refinement and expansion of existing vocational programme" (Kettering F. Charles).

The Commission's career education proposal is divided into three phases:

- (1) A programme in career awareness is designed for students in grades eight to ten;
- (2) Exploratory opportunities are provided through a variety of "Career Clusters";
- (3) Includes extensive opportunities for students in grades eleven and twelve to concentrate on the acquisition of specific skills related to the occupations they have chosen.

"Career education is the infusion into all educational curriculum and students counselling. The main thrust of career education is to prepare all students for a successful life of work by improving the basis for occupational choices. Career

education is education for a profession or other occupation demanding special preparation" (Hoyt B. Kenneth).

With the passage of the Education Amendments of 1972, the National Institute of Education was created. "A Career Education Task Force" was established by this Institute. There are two essential bases for viewing the case for career education as it currently exists in American education. The first and most obvious relates to the changing and ever closer relationships between education and the occupational society. The second stems from the fact that worker alienation exists within the educational system as well as in the general occupational society.

The first federal legislation dealing with the practical education of the industrial classes was the Morrill Act of 1862 by which colleges were endowed to 'teach such branches of learning as are related to agriculture and machine arts'.

In 1917 the Smith Hughes Act became law and on this Act the present American Vocational School System was built. It provided federal subsidy, matching the local state expenditure for organised full or part-time pre-college level classes in agriculture, home-economics, industrial and later commercial pursuits. In 1937 the Fitzquerald or National Apprenticeship Act was passed. It sets the following general standards of apprenticeship: (a) minimum age 16, (b) a schedule of training to be drawn up, (c) wages to average 50% of the full adult rate, (d) related instruction at school of a minimum 144 hours per year. It also defined the apprenticeship agreement and its registration by the state. By 'The Man Power Development And Training Act' of 1962, short, intensive forms of training preparing for direct entry to skill employment were established. The Vocational Education Act was passed in 1963. The Area Redevelopment Act of 1961 also provided for *ad hoc* training courses in occupations which will assist the economic growth of a depressed area.

The vocational high schools were once the last option for the less able scholars of junior high schools or for those who were unable to enter college for financial reasons and, therefore, required a quick means of earning a living. In recent years vocational high school has come to earn much greater respect.

The type of curriculum provided for boys and girls between 15 and 18 is that which gives general education and technical training in approximately equal proportion. The trades covered by these schools include courses in commerce, industry and fields such as agriculture, and for girls home economics, nursing and commerce. There is no nationally standardised or federal certificates issued by these schools as there is by their European counterparts, although certain industries have undertaken to certify apprentices in their own field of work with the support of state apprenticeship councils.

The Vocational Education Act of 1946 and Title VIII of the National Defence Act of 1958 provide for the setting up and maintenance of area vocational technical schools with 50% federal aid. Their aim is to prepare pupils for direct employment at the age of 18. The area vocational schools however tended to achieve junior technician standards of the vocational schools operating on the Smith Hughes Act.

2. VOCATIONAL EDUCATION IN THE UNITED KINGDOM

The term "skilled labour" applies to persons who have received a broad education and training in the exercise of a trade or craft in a particular field (Warren Hoge).

It is within this definition that there is the widest disparity between the methods used by the various countries of the world. In Belgium, for example, nearly all training for the skilled industrial trades is done in schools. That is, the educational centres are specially equipped to give both education and trade training on a practical and realistic basis. This sort of training may commence at an age as low as 12 years.

On the other hand, in countries such as the United Kingdom, the ideas of such intensive vocational training during school years is viewed unfavourably and nearly all training for skilled occupations takes place after school leaving or after the age of 15, where trade subjects are taught in English Technical Secondary Schools as a medium of education and not with the object of training craftsmen. Apprentice training in such countries follows after schooling.

After leaving a secondary modern school at the minimum age of 15, the student enrolls as a part-time student at a local technical college. The student may choose one or two courses: (a) a craft course relevant to a skilled trade, permitting him to gain a craft certificate after three years or an advanced certificate after five years; (b) a general course which lasts two years and combines practical work, basic science, mathematics and elementary technical theory. The craft and more recently the technical qualification awarded by the City and Guild of London Institute are better known and respected in the industrial concerns.

The second option quoted, the general course, is the starting point in Britain of the second way to continuing education. During the first year of the course, a careful diagnosis of each

student's abilities is made, at the request of which he may be relegated to a craft course, transferred to a technical course or promoted to the second year, which leads on to higher technical courses.

Thus, from whatever type of school the apprentice has come and to whatever type of qualification he aspires, he is assessed and advised during these early years and finally placed on a line of study suitable to his abilities.

The national certificate at a technical level is slightly higher than a United States associate degree and approximately the qualification of Ingenieur of the Federal Republic of Germany, though the breadth of study is smaller with little outside the minimum technical subjects necessary for the particular occupation.

The National Certificate system has been in operation in the United Kingdom for over 40 years and the programme attracts a great many students. There is a continuous gradation of qualifications from skilled worker to the higher technician and professional levels and a continued re-orientation of individual students according to their proven abilities.

The system for the training of technicians in the United Kingdom is a function of the department of further education and not as in France or recently in the United States, an extension of the secondary school system.

3. VOCATIONAL EDUCATION IN JAPAN

The school system in Japan is governed by the school education which calls for equal opportunities for all the people to undergo education. The 6-3 3-4 system begins with nine years of compulsory education followed by compulsory post-secondary education, consisting of general and special courses. The general courses cater to the needs of those wishing to proceed to higher education and special courses provide vocational education to those choosing a particular vocational area as their future career. At this level, there are also technical colleges which provide technology-oriented and mercantile marine related courses.

The ratio of student admission to the upper secondary schools has been increasing due to the progress of industrialisation. There is a growing demand by industries for high calibre workers and a steady rise in a trained worker's real incomes.

Vocational education generally refers to the kind of education undertaken to equip the trainees with the knowledge, skill and posture required in taking a specified type of job. In Japan, vocational education is provided in the upper secondary schools, special training schools and in public vocational training institutions. In present-day Japan, secondary vocational education forms the mainstay of vocational education. Vocational courses provided at this level deal with industry, agriculture, business, fishery, nursing, music, fine arts and physical education. In 1948, the total number of courses offered was 8,462 with an enrolment of 4.40 million at the upper secondary level. Of these 3,967 were vocational courses with an enrolment of 1.48 million.

There are three types of upper secondary school courses, full-time, part-time and correspondence. The full-time course is of three years' duration. In recent years, the enrolment in correspondence courses has gradually increased. In 1978, the

number of students enrolled in correspondence and part-time courses was 133,000 and 171,000 respectively.

In certain upper secondary schools, advanced courses are also set up to provide continuous educational opportunities in specified vocational areas or to obtain specified vocational qualifications. These courses are of varying duration, usually lasting about a year. One hundred and forty advanced courses were available in 1979 in 100 upper secondary schools.

Any student, enrolled in the part-time or correspondence course who is undergoing, at the same time, systematic education either on-the-job in an enterprise or at a trade education institution, is given credit for a part of the relevant course in the upper secondary school. This measure besides encouraging the students to improve their qualifications also promotes mutual partnership between schools and industrial enterprises. Over 100 upper secondary schools had this partnership with trade education institutions in 1978.

In addition to the secondary vocational schools there are special training schools, public vocational training institutions and social correspondence education schools which also undertake vocational education and training programmes. These schools had an enrolment of 406,613 in 1978.

There are three types of institutions providing public vocational training — (i) General vocational training centres which train semi-skilled workers in a basic skill for a duration of one year for lower secondary graduates and six months for upper secondary graduates; (ii) Vocational training centres which train skilled workers for 2 years for lower secondary and one year for upper secondary graduates; and (iii) Colleges of vocational training which train highly skilled technical workers. The training period is 2 years for upper secondary graduates. There were 415 public vocational training institutions in 1978.

The administration of Secondary Vocational Education in Japan is vested in the Vocational Education Division of the Bureau of Elementary and Secondary Education in the Ministry of Education. Two administrative councils also deal with secondary vocational education. Local educational administration is carried out by the prefectural governors and the prefectural boards of education.

All vocational education courses aim at training persons to work in industry, agriculture and business in different capacities. About two-thirds of the total number of credits are for vocational courses. For the remaining credits the students are allowed to choose subjects and subject areas in accordance with their needs or the features of each course.

Japan has a few problems with regard to the training and recruitment of vocational teachers; still vocational teachers are treated more favourably both in respect of providing them with in-service training opportunities and emoluments. Vocational teachers serving in the national and public schools get 10% of their monthly pay as a special allowance.

The Ministry of Education defines the standards of curriculum. Each school organises the appropriate curriculum under the terms of these standards in consideration of its environment and student conditions. The Ministry of Education compiles and publishes most of the text books for vocational education in upper secondary schools.

4. VOCATIONAL EDUCATION IN DENMARK

Secondary Education begins as a rule at the end of the fifth year of school work when the pupil is eleven years old. Outside of the system of instruction such as the middle school for four years, the one year real courses and the four year Gymnasium, there are certain other schools designed to aid the moderately schooled average citizen in his chosen vocation or trade. Particularly important are the trade or industrial schools. They number over a hundred and fifty and have a total yearly attendance by students over fourteen years of age. The courses offered include Danish, algebra, geometry, book-keeping, one or two foreign languages and a considerable variety of more specialised work in masonry, carpentry, wood-turning, blacksmithy and other trades. Many of the trade unions also support, for the benefit of their members, a wide variety of evening trade schools in which instruction is concentrated upon subjects designed to turn the student into an expert in his chosen trade. Probably, the most outstanding individual institution of these two groups of industrial schools is the technological institute which offers short courses for mechanics and manufactures and also gives instruction in the use of machinery for farmers.

Schools of home keeping and domestic science have shown a rapid growth. These schools are largely attended by girls from the middle rather than lower class homes. These vocational schools for women and the trade and industrial schools testify to the existence of important educational work designed to lead the individual to a more successful mastery of his work, however unpretentious it may seem and thereby to make him a more valuable member of the society.

5. VOCATIONAL EDUCATION IN PHILIPPINES

A. Dr. Charles Hummel, reporting in his book, *Education Today for the World of Tomorrow*, finds it very encouraging that in many countries of the developing world there is "a tendency to integrate education more carefully within overall development plans".¹ Indeed, in the Philippines the reform of the educational system has been geared towards developing education with national development. The President of the Republic, His Excellency Ferdinand E. Marcos, states that:

"Education is basically intended to satisfy the human need for knowledge. In a developing society such as ours, it acquires the more urgent obligation to address itself to the needs of national development. Man-power development seeks to respond more directly and more materially to the changing as well as mounting requirements of the process of development ...

"Education then is a source of economic and social benefits. It determines in part the individual's income and society's productive capacity. It is also a principle of occupational and therefore social mobility.

"Education and man-power development together with employment constitute the central factors of the human resource development strategy. They are central because they can make possible the satisfaction of the other basic material needs such as food, housing and medical care ... as reviewed by Betty Werther in *UNESCO Features*, No. 727, (1978), Paris, p. 12, combining education and work.

"In the context of a rapidly growing population seeking entry into the school system and jobs in the labour market, we established two basic formulations of policies in the area of education and man-power development.

1. Hummel, Charles, *Education Today for the World of Tomorrow*.

These basic policies have provided the framework for re-direction, adjustment and innovation".²

President Marcos was referring firstly, to the Educational Development Decree (Presidential Decree 6-A) which defined the objectives of the national educational system, relating them more directly to the goals of national development; and, secondly, to the New Labour Code (Presidential Decree 442) which seeks among several major objectives, to maintain, through man-power development and employment promotion, a national work force capable of meeting the requirements of national development.

The country's Four-year Development Plan (Fiscal Years 1974-1977), therefore, includes programmes of man-power and educational reforms which are directed mainly towards the development of the needed skills in response to projected future needs of the economy. The plan stresses the need for developing human resources for the promotion of economic development and social progress because "It is in this manner that the people will be better equipped for gainful employment as well as be able to share in the fruits of economic advancement".³

It is in the context of these basic national policies that the Board of National Education revised and restated the national educational aims to make them operationally workable objectives of education issued by the Board in 1957.

B. Reorienting School Programmes to Combine Education and Productive Work Experiences: It may be stated here that 'work experience' has been a part of the curricular programme of the Philippine schools since 1900.⁴ The objective of work experience was to develop among the young an appreciation for work and a responsibility for maintaining the environment of their school in an attractive and safe condition.

2. Marcos, Ferdinand E., *Five Years of the New Society*, Manila, 1978, p. 116.
3. Republic of the Philippines, *Four-Year Development Plan, FY 1974-1977*, Manila, 1973, p. 22.
4. Manual Juan L., *Source Book in Philippine Education*, Manila, 1973, p. 220.

A survey of the public schools in the Philippines in 1960 showed that:⁵

"Each day an eighty-minute period is provided for agriculture in grade five, and a similar period for shop activities in grade six. The agricultural work in grade five is usually gardening and cultivating field crops. However, some schools also give instruction in the care of swine and poultry. The shop activities in grade six are general in nature. They introduce the student to simple hand tools and the raw materials of the region in which the school is located. Most of the children are eleven to thirteen years of age. They learn many agricultural and shop skills, benefit from the physical activity, and are provided with an outlet for their native creativity. This programme is primarily pre-vocational and an extension of work experience. During these two grades, girls are given training in handicrafts, cooking and sewing as provided in the home economics curriculum ...

"The initial specific programme of vocational training begins at the secondary level in the trade schools, the schools of agriculture, and the fishery schools. The achievement in these schools might be considered to have three levels. The first level is the broad basic training, which consists largely of basic principles, simple projects, and the use of fundamental hand tools. This will, in general, be given in the first two years, and will develop the basic skills of the occupation for which the student is in training. The second level of training provides for more complex projects, with additional tools and equipment, and for the development of more extensive skills. It develops a tradesman or an agriculturist who has the skills for performing his occupation effectively and efficiently. This higher level of skill is the primary objective of all the vocational schools. The programme of vocational training in the Philippines has a third level of training. Its objective is to train for exceptional skills and is called 'technical training'. It is given for a period of two or three years beyond the four-year secondary level ...

5. *A Survey of the Public Schools of the Philippines, 1960* (Carmelo and Bauermann), pp. 180-82.

"There are four major types of vocational schools: trade schools, agricultural schools, fishery schools, and home industry courses. The first three are primarily secondary schools, with some post-high school curricula. The home industry centres are for adults or out-of-school youth".

C. Combining Education and Work for Out-of-School

Population: One of the major problems of education in the Philippines is the low survival rate in the formal educational system. The Presidential Commission to Survey Philippine Education reported in 1970 that for the Grade 6, the survival rate was only 55 per cent; for 4th year high school, 25 per cent; and for college, 11.5 per cent. "These figures simply mean that there are about six million Filipinos between 12 and 17 years of age who are out of school and some 600,000 who join their ranks every year". The problem has, therefore, become economic.

On December 8, 1966, President Marcos created the Man-power Development Council through Executive Order No. 53, to serve as the central authority in man-power planning and co-ordinating agency in the development and utilization of human resources. After months of planning and organization, the Council established a six-week skills training programme in five pilot provinces. 1,073 out-of-school youths and jobless adults took the trade courses offered and most of them found immediate employment after completion.

Because of the success of the initial programme, mass skills training was conducted on a national scale in co-operation with local government authorities and other government agencies, particularly the Department of Education and Culture.

In 1969, Republic Act, 5462 was passed by the Congress of the Philippines which added the youth component to the programme of the Man-power Development Council and gave birth to a new agency, the National Manpower and Youth Council.

In 1970 the Council established 174 training centres offering 49 different courses or combination of courses. A total of 72,420 unemployed adults and out-of-school youths graduated from these courses.

A subsequent study undertaken by the Council and the UNDP/ILO showed, however, a low absorption rate of 32 per

cent. In 1972, therefore, the whole programme of the Council was re-structured. The main thrusts of the Restructured Manpower Training Programme were: (1) emphasis on quality of trainees and trainers, and (2) emphasis on the relation of the programme to the actual needs of industry in the region where it is implemented.

The restructured programme provides for the following: an instructor training programme, a trainee selection strategy, a training scheme, a simulated factory atmosphere, a modular system for the preparation of training materials and a scheme for evaluation and follow-up. The programme also emphasized provisions for individual differences in learning pace and co-operation with local firms to evaluate the programme of the trainees.

In 1973 there were twelve training centres located in various provinces from which 4,275 trainees had graduated by 1976.

The Director-General of the National Manpower and Youth Council has emphasized that every effort is to be made to ensure that the graduate makes the best use of the skill acquired by him during his training. Follow-up work starts three months after graduation to determine whether or not the graduate has been reasonably placed. The restructured Manpower Training Programme guidelines provide for the appointment of a placement officer to establish a continuing link with industry.

6. VOCATIONAL EDUCATION IN NEW ZEALAND

Responsibility for maintaining relationships between vocational education and employment in New Zealand rests mainly with three statutory bodies, the Vocational Training Council (VTC), the Trades Certification Board (TCB), and the Technicians Certification Authority (TCA) and Special Committees which act through them.

The Department of Labour through its apprenticeship committees also plays an important role in ensuring that vocational education keeps in touch with the needs of industry.

Thirty-seven national apprenticeship committees and two hundred and fifty-seven local committees administer 30,000 apprentice contracts. The Trades Certification Board sets examination standards, mounts examinations nationally for 72 trades, sets and moderates 424 examination papers for 42,000 apprentices each year, and on the basis of examination results, awards certificates to the successful candidates.

The Technicians Certification Authority in the same way mounts examinations nationally for 40 certificates at technician level, sets and moderates 290 examination papers for 30,000 students. Study for completion of any certificate awarded by these bodies is dependent on concurrent study at an institute and work experience in relevant employment.

A great deal of work done by the statutory bodies is carried out by committees responsible to them and both the Boards and their committees include employers, trade unionists, educators and government officials.

The Vocational Training Council establishes training needs and priorities, evaluates training schemes and recommends training incentives through its 26 industry training boards, and is concerned with encouraging training in enterprises from operative to management level.

The Council has helped many New Zealand enterprises, both large and small, to systematize on-the-job training and has been instrumental in bringing about rapid growth in the number of enterprises providing training courses for their employees and for a marked improvement in the quality and availability of these courses.

The Technicians Certification Authority and the Trades Certification Board are independent statutory bodies for whom the tertiary institutions act as agents, providing tuition for the certificates they administer. Technical institutes also act as teaching agents for the NZ Society of Accountants, the Royal College of Health and other similar examining and certificate awarding bodies.

The bulk of operator level training is carried out by enterprises who may qualify for a training incentive payment but the amount of training at operative level taking place in technical institutes is increasing.

Current Priorities

Priority areas are sometimes dictated by events, rather than promulgated long-considered national policy. The formation of an *ad hoc* Cabinet Committee on Training and Employment of Youth and the refurnishing of the Consultative Committee on Employment, which is part of the Industrial Relations Council, both indicate the growing national concern over a shortage of skill and job opportunities amongst the young.

School-leavers and people under 25 account for a disproportionate percentage of those without work or registered as unemployed and receiving welfare assistance. This trend has been increasing in the last few years.

Formal Programmes

In-School Programmes: Guidelines on a Student Employment Exploration Scheme are at present being prepared for circulation by the Department of Education to secondary schools. This idea has grown out of work experience schemes which were organized in some schools for students with physical or other learning problems. Some school organizers felt that the scheme had merit for all students, rather than just those who were unlikely to complete the normal type of curri-

culum, and, in fact, there was a spontaneous pressure from other students to participate in a work experience programme.

If people who have left school later become motivated to obtain further formal education or qualifications, there are growing opportunities for them to do so. In addition to the evening class system at polytechnic or high schools, the secondary schools are now opening their classrooms to adults. Almost half of the country's secondary schools now have some adult students, with a total of over 1,000 in 1978.

The feedback from the teachers organizing the adult studies is positive. Adults usually join regular classes of secondary students, and teachers are reporting a better morale in the classroom, and better work attitudes amongst the regular students (often after initial tension); as well better interpersonal relationships are apparent in classrooms, commonrooms and school grounds. In some rooms, parents and children take classes together and help each other with homework.

Tertiary Education: In higher education, New Zealand universities offer provisional entry to non-matriculated citizens at age 21, with continued enrolment dependent on a reasonable record of academic attainment. The university fees system compares favourably with most in the world, and the system of Standard Tertiary Bursary is at present under review. The Department of Education's 'sighting shot' at the problem filled 96 pages, and it would overburden this report, but the existing bursary system provides for some 25,000 tertiary students and 5,000 student teachers, at a cost of roughly \$25 million for the tertiary students and \$28 million for the student teachers. The aim is to produce an equitable system of study grants covering all persons undertaking post-school study, study grants being almost the only form of study assistance given in this country.

More than 80 per cent of the courses in both technical institutes and community colleges are 'vocational' and cater for many levels of practical and academic competence, from short courses at operative level through all forms of apprentice training to technician, nursing and paramedical studies which often equate with first or second year levels of a university degree.

Technical institutes and community colleges award their own certificates in some areas but most of the teaching is direc-

ted towards examinations in skills at Trade Certificate level administered by the New Zealand Trades Certification Board, or to examinations administered by the New Zealand Technicians Certification Authority, which examines and issues certificates at technician level. New courses are approved by the Department of Education and the number of courses approved each year depends on staffing levels which the Government sets, having regard for the country's overall manpower needs. A staffing budget is allocated to each institute and within this budget the institute sets its priorities for courses it wishes to establish or continue.

Institute and community colleges are financed from funds voted by the Central Government and apportioned through the Department of Education according to a formula based on student hours taught. (A student hour is one hour spent by one student actively being taught or supervised by one tutor).

Although technical institutes and community colleges are subject to the general oversight of the Department of Education, each institution has an independent governing council responsible for hiring staff, for stewardship of the finance voted and for the general day-to-day running of the institution. These councils are elected from representatives of industry and commerce (both primary and secondary), trade unions, employers' organizations, local bodies, usually on an electoral college basis.

Mention should also be made of the extensive extra-mural enrolments at university, which in 1979 are likely to include Stage Three papers for the first time. This is a popular method of obtaining job qualifications, although it usually only involves the educationally advantaged.

A sub-committee of the New Zealand National Commission for the UNESCO is currently studying the relevance of the university science education to industrial employment, with a view to setting up a workshop seminar on university-to-industry transition.

The Education Act 1964 defines a technical institute as "an educational institution providing continuing education and related advisory guidance services". For the purpose of defining a community college, the phrase "and other educational services designed to meet the particular circumstances of the local community" is added.

In 1978, technical institutes, community colleges, senior technical divisions of secondary schools and technical classes at other institutions were expected to cater for an estimated 5,500 full-time students and 100,000 part-time students in addition to the 24,000 enrolled with the Technical Correspondence Institute.

A tertiary bursary of \$ 15 per week if the student is living at home. To qualify for the bursary a full-time student is defined as one who attends an approved course for a minimum time of 800 hours each year. There is no bursary assistance for part-time students. In 1977, bursary payments to technical institute students were estimated to cost the Central Government \$ 3,800,000.

Technical institutes in New Zealand are non-degree granting institutions and teach a variety of courses, both 'vocational' and 'non-vocational', to students who have completed their secondary school education and whose ages range from 15 years upwards.

Non-Formal Systems

1. Current Issues and Policy Trends: There are now avenues provided, through the independent National Council of Adult Education and Vocational Training Council, for co-operation and collaboration between the formal and informal learning systems, the workforce, industry and commerce, and also with other occupational groups which might not normally be covered by the simple inclusion of employers' or employees' organisations.

It would be fair to say that New Zealanders have a passion for consultation which cannot be readily set aside, and for this reason the likelihood of sweeping changes is probably remote. However, at the present time, the improving interrelationships mentioned above are giving rise to a number of useful schemes and pilot projects. These are being boosted where possible by an encouragement of regional initiatives and responsibility on the part of Central Government. The search for better systems is also being prompted by straitened economic circumstances, which are producing high levels of unemployment, particularly in the young age groups and amongst school leavers.

Action has been slow on any plans which might produce integrated man-power planning or an active labour market po-

policy such as that of Sweden. The requisite data base will take considerably more patient construction, and the cyclical slumps in the economy always leave a legacy of skill shortages behind them.

The field of Continuing Education is an expanding one, and many of the organizations involved in the field have moved a considerable distance away from the traditional 'hobby class' concept of adult education. Many of the course offerings of high school extension classes, university extension, the Workers Educational Association and other groups today reflect the articulated needs of their communities, and, in many cases, deal with social needs or occupational skills as much as with the enrichment of life. The fees for most of such learning opportunities are extremely modest.

The recent report of a national Task Force on Economic and Social Planning¹ underscored the need to expand the emphasis on continuing education, particularly non-vocational community education programmes and 'second chance' education, as the first recommendation in the social planning area. The second recommendation was concerned with educational entitlement for all citizens.

Mr. Henk Vredeling, Vice President of the European Commission, has been reported recently as saying that a 'qualitative mutation' seems to be taking place in relation to the world of work; that in the future there may not be a place in the work-force for everybody who might formerly have sought a formal job with pay; and that the chance is being given for more personal and environmental caring in our communities.

At the same time, the Manpower Services Commission in the UK (Review and Plan for 1977) has warned that the current unemployment trends will continue at least until the early 1980's and that there is need for an expansion of vocationally-oriented education for adults. The main question seems to be who shall fund and promote it; governments and industry often seem wedded to the concepts of cost-cutting depression conditions, which leaves the unemployed or underemployed isolated, and potentially alienated from society.

1. "New Zealand at the Turning Point", Report of the Task Force on Economic and Social Planning, 1976.

The NZ Labour Party Manifesto for the 1978 elections includes relevant proposals, e.g., provision for school leavers to do one year's community work while receiving the standard tertiary bursary.

2. Labour Co-operatives: Some groups of disadvantaged persons, particularly among ethnic minority groups, are questioning the need for people to always fit in with the demands of an industrial and economic system which is largely discredited in social terms, and which by its very nature will continue to produce a social debris of alienated and disadvantaged people.

A 'new economic order' is looked for just as eagerly in some parts of New Zealand as it is in countries which are immediately recognized as being Third World. This idea, that individuals should have more control over their destinies, and that people should work in order to live more fully, rather than exist in order to provide their labour to industry, is one of the main motivating forces behind the formation of labour co-operatives on the urban areas.

A training scheme for persons interested in assisting or co-ordinating the growth of new labour co-operatives is now being offered at one community college. Although the skills being taught to these co-ordinators can be described as 'supervisory' or 'managerial' in traditional terms, they are distinctly different from those of the average manager in industry, and are much more closely related to the low-key approach of a community development worker or 'animateur'.

The co-operatives often indicate a wish for an alternative life-style which will preserve many of the supportive, communal values of Polynesian Society in an urban environment.

Denis O'Reilly explained that these are not national schemes, but they involve many people who are linked by a common philosophy. He added that, since by the year 2000 some 50 per cent of New Zealanders will be part-Polynesian in origin, a Polynesian seems to be one with a realistic approach to our economic and employment problems.

3. Small Business and Other Forms of Occupational Training: More than 90 per cent of New Zealand entrepreneurial undertakings are small businesses with less than a dozen employees, small partnerships, or self-employed persons operating as individual enterprises. The failure rate amongst these enterpri-

ses is disturbingly high, as most such people do not have the requisite entrepreneurial skills. Government, through a Small Business Agency assisted by Vocational Training Council, Productivity Council and other organizations, is looking for a training programme which will provide the necessary skills and make this area of the economy more robust. The possible solutions include some coverage of business principles in all apprenticeship courses or at school, more varied offerings in the extension services of educational institutions, or informal learning situations sponsored on a regional basis and drawing largely on resource persons within the regions.

Other smaller, more experimental schemes around the country include the growth of rural craft co-operatives, often with a kinship or community base, the promotion of small, communally-owned industrial ventures and the labour co-operatives, which mostly enlist younger people from ethnic minorities who have been adversely affected by the transition from a rural to an urban life-style.

The existence and encouragement of all these groups, of the diversity of schemes for acquiring skills and finding a useful role in society, are hopeful signs for the future. Whether or not current economic upheavals throw New Zealand back more on to its own human and material resources, the wealth of new ideas now being put into practice should produce a more self-reliant internal economy and a richer fabric of life-style in this multi-cultural society.

4. Post-School Priorities: The consideration of pilot schemes, or those which are mainly designed to cope with the upsurge in unemployment figures, should not obscure the other major on-going educational-and-training schemes.

A national apprenticeship system of many years' standing has served New Zealand well, but there have been growing criticisms that it is not flexible enough to deal with fast technological or social change. For this reason the Vocational Training Council had been encouraging a nation-wide discussion of the scheme and the alternative methods of up-dating it.

The Vocational Training Council's review of apprenticeships include suggestions for:

- apprenticeship courses to comprise modular courses in a variety of skills;

- provision for second-chance education.
- Pre-employment training;
- a basic pre-apprenticeship module covering a variety of fields. (It was noted that Technical Institutes and Community Colleges have been running these general courses giving young people the opportunity to consider a variety of skills and job opportunities).

Successful schemes of pre-apprenticeship training, which are designed to give essential learning skills to would-be apprentices, have been in operation for some years. These have been designed to assist rural Maori youngsters, but the UNESCO-sponsored report on Technical and Vocational Education⁷ has recommended that this type of strengthening of the apprenticeship system be extended to urban youths, either Polynesian or European, who are in need of vocational nurturing.

It has been suggested, in the report on Technical and Vocational Education,⁸ that all students should be encouraged to plan for at least one year's work experience between the completion of compulsory schooling and the commencement of any continuing education. Recommendations of this Committee include:

That vocational education should be an element in the general education of all secondary students; specifically to impart an understanding of the world of work, the range of occupations available, their educational and training requirements and the appropriate agencies where information and guidance can be obtained.

That the general education of students in secondary schools should contain vocational elements within their interests, and work exploration courses in secondary schools should be further developed and encouraged.

That broad-based pre-apprentice schemes for rural Maori youth be extended to cover urban multicultural groups in need of vocational nurture.

7. **Technical and Vocational Education.** Report of a Committee of the New Zealand National Commission for UNESCO, 1977.

8. *Ibid.*

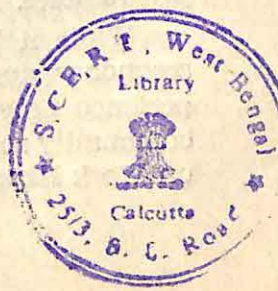
That secondary schools should encourage their students to consider the advantages of spending at least a year in the world of work after leaving school and before entering continuing education.

That supplementary programmes of vocational and technical education which minimize the reliance on verbal or reading skills in initial vocational training, should be encouraged in both pre-employment and on-the-job training.

The Department of Labour had promoted several employment-and-training schemes, funded out of a special mini-budget allocated at the end of 1978. These cover school leavers pre-employment training in job-seeking and social skills; special institution-based training programmes to equip particularly unemployed school leavers with minimal job skills, a skill promotion scheme which offers to subsidize the wages of apprentices or other trainees in private industry where the jobs created are surplus to the normal labour requirements of the enterprise; a first-job subsidy and an additional job subsidy which will encourage employers to give people work, but without any formal or off-job training provisions being guaranteed.

At the outset, there was some protest against the emergency schemes from those concerned with regular and on-going programmes of training and education, such as trade unions or 'Industry Training Boards. Consultation and involvement has removed most of these objections.

The present situation is helping to shorten some of the gap between formal and informal learning opportunities, between vocational training for employment in industry and other work occupations in society. This allows for better co-ordination of functions, and produces a 'world of work' which should be ever more responsive to the needs, motivations and circumstances of the individuals which give it life.



7. VOCATIONAL EDUCATION IN AUSTRALIA

The work experience programmes developed throughout Australia over the last few years have been aiming at providing opportunity for young people to gain experience in a work situation as part of their schooling. Work experience has been used in Australia in technical high schools for some time to provide students with vocational courses, and it arose in schools to overcome dissatisfaction of teachers with school programmes which failed to cater effectively for the handicapped and specially disadvantaged.

In general, work experience is regarded as a tool of career education and its aims are to be seen in the context of career education. The development of work experience programmes is a function of student numbers and needs, resources available in terms of staff and time restraints and employer willingness to co-operate, and the relationship of the programme to the career education and the counselling programmes of individual schools.

Forms and Selection of Work Experiences

In Australia, there are evident differences in aims of and emphasis on work experience programmes. Many are aimed at the non-academic, potential early school leavers and students with behaviour problems, and focus on manual and semi-skilled jobs. Others try to provide the full range of job experiences in professional, semi-professional and academic employment and still others emphasize community welfare programmes.

While it is recognized that as a matter of principle all secondary students should be able to participate in work experience programmes, the number of students involved and community resources will impose limitations. The Scott Report on Work Experience programmes in New South Wales schools

commented that schools should establish priorities that take into account their own disadvantaged groups as well as the needs of other schools in their district.

The need for selection priorities has reinforced arguments for the co-ordination of work experience at a regional or district level, and this has been recognized by the States. In New South Wales, the Scott Report commented that because of the community-based emphasis of work experience it is important that the various groups affected are kept fully involved and informed in the development and operation of programmes. South Australia has developed a Pilot Handbook suggesting that schools should form advisory groups consisting of staff, students, parents and local employers.

Proportion of School Time Given to Work Experience Programmes

The actual time allocated to work experience programmes in Australia has not been documented but it varies from State to State and school to school. Some schools devote little or no time to the programmes, others have intensive work experience programmes at the end of year 12 just prior to students completing school and in conjunction with a more general career preparation programmes, while others, such as the Daramalan College in the Australian Capital Territory, devote one day per week to work experience for disadvantaged groups. In the latter case, however, career education is an integral part of students' schooling in years 9 and 10.

Legislative provision has been made in some States and Territories to provide upper limits on the frequency of work experience participation by students in any one year of schooling. This has been prompted by the need to ensure adequate supervision of students in the work situation, and circumvent any tendency by employers to use a succession of students to replace normal employees.

In Victoria, the Work Experience Act limits the total number of days engaged in work experience to twelve per student per term, or thirty-six days per year. The attached project report on 'Work Experience Programmes in Victorian Secondary Schools' outlines the development of work experience programmes in Victoria. New South Wales leaves the schools to decide for themselves limitations on programmes, but at the

same time expects them to take into consideration the needs of other schools in the area and local employment conditions.

In the Australian Capital Territory, work experience is restricted to the handicapped or specially disadvantaged, time restrictions being such that a student may not be employed in a work experience programme for more than sixty school days in any year except in a sheltered workshop or activity therapy centre.

Availability of Work Experience Programmes

As discussed above, in the Australian Capital Territory, work experience programmes are only available to the handicapped or specially disadvantaged. Such restrictions do not apply in the States, all secondary students being eligible.

Availability of work programmes will be restricted however by such factors as the importance given overall to career education programmes within individual schools, employer willingness to participate and consequently work being provided. The programmes in Australia generally focus on years 9 and 10 of secondary school and where opportunities are limited, preference is given to the more disadvantaged students. The attached project report II discusses a pilot work experience programme for handicapped secondary school students in New South Wales.

Career education and work experience programmes are not common to primary school curricula, but at the tertiary level particularly for the professions, trade and other vocationally oriented courses, it has been a standard practice for many years to include practical work experience as a compulsory portion of a student's course.

Training and Re-orienting Teachers and Other Educational Personnel to Work Experience Programmes

Because career education, including work experience, is still in its infancy, although rapidly expanding and continuing to gain acceptance, there is little provision made to train career teachers, either during the preservice courses or by means of post-service courses. The need for formal training has been recognized, particularly by Career Education Associations, and these Associations have urged the introduction of such training into teacher courses.

Nevertheless, in some states work experience kits and handbooks have been developed to assist interested teachers to develop work experience programmes. Examples are the Work Experience Kit in Victoria developed by the Work Experience in Schools Committee, and a Pilot Handbook for use in the Introduction for Work Experience into the School Curriculum developed in South Australia.

The Work Experience Kit discusses the aims of work experience, how to set up a programme and the implications of the Work Experience Act 1974 of Victoria along with guides for teachers on the steps which need to be taken for legislative and industrial reasons in setting up a programme.

Development of Instructional Materials and the Use of Mass Media

As discussed above, instructional material guides are provided in the Work Experience Kit in Victoria and in the South Australian Pilot Handbook. In other States, where formal work experience programme guides have not been developed, it is left to career education teachers to develop their own instructional material. In New South Wales, at Henry Kendall High School, a career education teacher has developed a Living Skills Curriculum for use by a Sydney School for mildly handicapped students, and a work experience programme was developed supported by a grant from the schools commission.

The mass media have not been used to any great extent in the development or dissemination of work experience instructional materials.

Problems Encountered

The problems encountered in work experience programmes in Australia have been caused by factors both within and out of school.

Within schools, work experience programmes, along with other aspects of career education, can only be successful if accepted as a part of the total school programme. This requires teacher acceptance of the programmes and a consequent co-operation by them to release students from more traditional curriculum subjects to participate in the prog-

rammes. In schools such as Minerva Street in New South Wales, and at Daramalan College in the Australian Capital Territory, where the programme is aimed at handicapped students, the problem of co-operation is not as difficult, the school programme generally being oriented towards training the students in useful vocational skills.

Parental acceptance has also been found to be important, and it has been found helpful to include them in the actual development of work experience programmes. There has been some evidence, particularly in South Australia, of parental disapproval of the encouragement of girls to participate in programmes which may result in their undertaking work experience in fields not considered to be traditionally female. Better co-operation with parents could overcome such barriers.

A major problem for teachers developing programmes is in arranging work experience in a broad range of fields, thus helping students to be exposed to a greater variety of experiences. This is particularly so in the more rural and isolated areas, and as a possible means of overcoming this it has been suggested that intensive work experience in the cities should be arranged during holiday periods. If such a programme were adopted, it would probably require that students be subsidized for the travel and accommodation costs involved. Even in metropolitan schools, however, schools find it difficult to obtain a range of work experience and some schools have abandoned the scheme, believing that the required organization time does not warrant the return both to the school and the students.

Out of school, problems have arisen mainly in the areas of legislation and industrial awards for students. At present, Victoria is the only State with legislation for work experience enacted, but other states are in the process of introducing relevant legislation. At the Commonwealth level, the legislation necessary to cover industrial matters relating to Commonwealth awards, has yet to be introduced.

Pre-vocational Education Programmes

Pre-vocational education programmes in Australia are conducted by technical colleges to provide students with short

introductory courses prior to embarking on more extensive courses in particular technical fields, including apprenticeships. The students involved in these programmes are normally school leavers aged around sixteen. The aim of the programmes is to reduce the amount of time subsequently spent on formal vocational courses. In the case of pre-apprenticeship courses reduction is also achieved in the time and costs to employers of indenturing apprentices.

Integration of General Education and Technical and Vocational Education at Secondary Level

Institutional Organization: Until recent years in Australia, schools operated within curricula set down at the central level of State Education Departments. At the same time, there was a system of selective secondary schools geared to the preparation of students for academic courses at universities, as well as technical education schools specializing in preparation for the trades. Of late, the States have gradually introduced comprehensive schooling, although the State of Victoria has continued to operate technical secondary schools alongside comprehensive schools. These provide a general secondary education together with a range of technical subjects, but do not provide vocational training as such.

At the secondary level, therefore, with an increasing trend towards comprehensive schooling, there has been a similar trend for the integration of all aspects of education — general, technical and vocational on the premise that the overall aim of education is to develop all aspects of individuals to enable them to cope with life outside the school environment. Preparation for work is one of these aspects, but should not be given major emphasis to the detriment of other aspects of an individual's development.

The Curriculum: In Australia, where the States have responsibility for education in general, the development of curricula is very much the prerogative of individual States. As well, parallel with the development of comprehensive schools, there has been a trend to decentralize decision-making in education policy and to develop schools more representative of the community in which they are placed. These trends have been reflected in part in the development of school-based cur-

ricula, which usually contain core group subjects and a range of optional electives.

At the senior secondary levels in particular, however, even though there may be a wide range of electives, students intending to continue on to further education are often constrained in the choice of electives by entrance requirements of tertiary institutions.

Technical/vocational subjects are not normally the required components of curricula in Australia, compulsory cores being made up of more traditional subjects relating to the development of basic skills of literacy and numeracy. As well, there is currently a considerable amount of debate within schools on the place of career education in the curriculum, focussing on whether career education has been developing rapidly over the last few years. There has not yet been time to consolidate a national approach to career education, although it is expected that the Commonwealth/State Working Party on the Transition from School to Work or Further Study will look into this issue as a part of the preparation of its second report.

The OECD Review of Education Policy in Australia during 1976 recommended that career education should be a compulsory part of the school curriculum and this was endorsed by the First National Conference on Career Education during May 1977. However, before such action is taken, detailed investigation will be necessary. Career Education Associations in the meanwhile would hope to encourage teachers of more general subjects to be aware of the vocational implications of their subject areas and to impart these to students.

Use of Workshops/Farms in Technical and Vocational Institutions

In Australia, where students attend technical and vocational institutions, the emphasis is not on productive work, although there are exceptions to this.

At the secondary level, there are some agricultural schools in Australia providing specialized vocational training in the primary industry. These schools are on farms the products of which are generally marketed, and often include animal

herds which are used in breeding programmes. Technical colleges on the other hand are less likely to be involved in the production of materials on a commercial basis; their emphasis is on training though apprentices are engaged in producing marketable commodities at their work places.

There have been developments of late to encourage students who are potential early school leavers to participate in manually oriented activities in schools; in the outer metropolitan areas of Sydney, some students have been engaged in the production of school equipment and activities such as gardening. Although this scheme has only been in operation a short time, already students participating have shown an interest in the work and a more positive orientation to school.

At Daramalan College in the Australian Capital Territory, the vocationally oriented programme for the mildly mentally handicapped students also encourages students to build their own equipment, for example a shed and ramps for use in servicing cars. It has been felt that this has reduced vandalism in the school, the students taking more care and interest in the equipment they have constructed themselves.

Role of Technical and Vocational Institutions in Providing Technical Support and Assistance for Programmes combining Education and Productive Work Experience

Work experience programmes in Australia when conducted by schools tend to draw on the resources of schools and of employers willing to co-operate with schools. However, link courses, providing a bridge between technical colleges and schools, have become increasingly available in recent years. By means of such courses, school students interested in particular technical vocations are able to use facilities in technical colleges which are not normally available in schools.

As discussed earlier, the former Technical and Further Education Commission now incorporated into the Tertiary Education Commission has expressed the hope that link programmes may be developed further in Australian TAFE institutions, and believes them to have some advantage over work experience programmes for secondary students.

However, a difficulty of link programmes is fitting them into the normal programmes of TAFE institutions. TAFE

systems in Australia are heavily committed to providing adequate facilities and staff for courses designed for post-secondary students, although link programmes could be scheduled to avoid additional demand for space in TAFE institutions. The former Commission recommended link programmes as an expenditure option within its particular purpose grants to the States.

Combining Education and Work Experiences by Student Participation in Development Tasks and Community Services

Work experience programmes in Australia do encompass participation in community services but special problems have arisen with non-profit organizations particularly in regard to payment. Catherine Blakers in her report 'School and Work' has outlined some provisions made to overcome these problems. The New South Wales Report of the committee appointed to investigate into and advise on the implementation of Work Experience Programmes in Government Secondary Schools in New South Wales (the Scott Report) recognized that non-profit organizations would need special consideration particularly on the question of payment to students, and suggested that such organizations should be exempted from some of the legislative requirements of the work experience scheme as a whole.

The Victorian Work Experience Act (1974) has provided that where the arrangement for employment under a work experience scheme is with a community service organization and if a student agrees to donate payment back to the organization, this should be stated in the employment arrangement. Nevertheless, this arrangement, while ensuring that the volunteer organization is not out of pocket from participating in the scheme, does involve unnecessary administrative procedures and book-keeping.

Combining Education and Work for Out-of-School Population

Non-formal Education Programmes which Aim at the Out-of-School Population: In Australia non-formal education programmes provide recurrent education opportunities for the out-of-school population. These programmes range from leisure type activities at tertiary education institutions or through

private organizations, to remedial programmes to assist people to reach minimum standards of literacy and numeracy, the latter programmes focussing currently on two major groups; the unemployed and non-English speaking migrants.

In the current high youth unemployment circumstances, the Commonwealth Government has seen a need to assist those unemployed youth who are unable to obtain work because of inadequate standards of basic skills, to upgrade such skills, and has developed programmes in remedial education. These have included the Education Programme for Unemployed Youth (EPUY), the National Education and Training (NEAT) Scheme and the Special Youth Employment Training Programme (SYET). These programmes have as a primary aim the development of job-seeking skills, and generally include training in literacy and numeracy.

These programmes were introduced over recent years and detailed evaluation of their effectiveness has not yet been completed. While they may be useful in the short term, as a longer-term measure it is probably of greater importance to tackle the problem of inadequate achievement in basic skills at the school, rather than post-school level.

English language programmes for adult migrants are also conducted in Australia, their purpose being to assist newly arrived migrants to achieve sufficient competence in English to be able to cope in a work situation and elsewhere.

Age Groups Specified in National Policies for Priority Attention: The 15-19 age group, particularly early school leavers are currently given highest priority for national attention. This priority was stressed in the Report of the OECD Group of Examiners of Australian Education Policy, and is reflected in the agenda of the Commonwealth/State Working Party on the Transition from School to work or Further Study.

Links between Programmes for In-school and Out-of-school Population: It is not common for links to be established in programmes for the in-school and out-of-school population, although because of the emphasis given to the transition from school to work or further study since 1974, it is to be hoped that schools will in the future take a greater responsibility for the integration into society of its school leavers, with a

consequent feedback to the school population of the difficulties encountered by school leavers in their transition to the work-force. Such concepts have not yet been developed in Australia to any great extent.

Main Priorities for the Out-of-School Population: The main priorities for the out-of-school population, particularly those unemployed, are the acquisition of skills related to occupations, followed by work-oriented literacy education. However, the Committee of Enquiry into Education and Training, mentioned earlier, had been asked to develop overall national priorities to the year 2000 for the post-secondary population.

8. VOCATIONAL EDUCATION IN THE UNION OF SOVIET SOCIALIST REPUBLICS

Syllabus of Soviet general education schools cover a wide range of sciences. Moreover, their secondary schools create all possibilities for children's training during out-of-school time. Thus, in IV-X classes there exist about 70 school programmes, 100 programmes of optimal subjects, 17 programmes of practical lessons. General education schools syllabuses are elaborated with due account to development of scientific and technical revolution which exerts its influence over ways and forms of realization of polytechnical principles and therefore the syllabus takes into account the following particularities of modern production:

- (1) Machines, apparatus, tools are getting outdated quicker than before and they are being replaced by others often quite different from the former ones. Due to this a man who works with them should have an ability to adapt himself to a new technology and new means of labour as quickly as possible.
- (2) Changes in industrial and agricultural technology are getting new and more dynamic. Frequently, changes of fundamental principles used in technology take place alongside with perfection and complication of equipment in keeping to the main principles of its operation.
- (3) The science itself is turning more and more into direct productive forces: at present there is no law of nature or new discovery which is not applied in production.
- (4) Many modern machines become very complicated aggregates when very different systems are functioning simultaneously.

Hence, it is considered necessary to indicate some abilities and skills which help to introduce productive labour to pupils, such as:

- Knowledge of processes and objects which are being used and of perspectives in main branches of national economy;
- Knowledge of the latest developments in different fields of science which will be applied to industry and agriculture;
- Knowledge of some aspects of production, i.e., planning, understanding of drawings, reading of devices, adjustment of equipment, etc.;
- Ability to use theoretical knowledge in practical activities particularly for improvement of existing techniques and technology;
- Ability to explain some situations in practical work by theoretical aspects of science;

Thus, realization of polytechnical principles in teaching of any school subject supposes the provision of pupils with optimum utilization of knowledge, aptitudes and skills in their studies and practical productive activities. The possibilities and role of particular teaching subjects in providing pupils with polytechnical knowledge are determined on this basis.

Pupils can benefit from many subjects in the curricula which besides theoretical polytechnic knowledge, provide aptitudes and skills permitting them to take part in the productive work.

The course of physics at school helps pupils to acquire deeper knowledge in technology, technical devices, transport, communication and agricultural industry, in technological processes together with industrial engineering.

In school curricula general theoretical laws and understanding of the process of production are so closely connected with other notions that there is a certain difficulty to single them out. The curricula can be adapted to local conditions and possibilities through using different educational and material facilities where it is possible to carry out a significant scope of practical laboratory work. In every grade (from VI to X) where physics is taught, from nine to thirty hours are devoted to laboratory and practical work which makes about 90 hours in total for the whole period of study.

Pupils get acquainted with materials concerning production and technology by means of teacher's explanations of different ways the physical phenomena and laws are applied in practice, demonstration of visual aids, of working technical models or technical devices themselves and their parts; showing films on physical and technical matters, e.g., 'The Electric Plant', 'The Electric Energy in the Agriculture', 'The Internal Combustion Engine', and also by excursions to enterprises, observations of physical processes by pupils themselves, solving of problems concerning industrial and technical matters. The pupils fulfil laboratory work aimed at the study of physical devices and technical equipment (e.g., air-pumps, water-pumps, hydraulic presses, electromagnetic relay etc.) and properties of materials (resistance, plasticity, electro-conductivity etc.) Out-of-class reading of literature on science and technology is proposed to the pupils which facilitates the identification of their skills and interests and helps them to choose a profession. The organization of out-of-class work in circles and first of all such circles which deal with the use of devices, technical engineering and develop technical creative abilities, non-obligatory courses and practical training of polytechnical character are the other devices proposed.

Curricula in the subject of chemistry at school determine the contents of educational material which serves to teach pupils the basis of the chemical industrial processes and the applications of chemistry in the national economy; to develop the skill to observe and assess, in the light of the theories which have been studied, those chemical phenomena which take place in nature, laboratory, in industry and everyday life and to develop the skills to handle chemical substances and carry out chemical operations; to develop love for science, inquisitive mind, the active approach to nature, the ability to acquire by oneself scientific knowledge.

During the study period of four years 112 hours in the curricula on chemistry are devoted to laboratory and practical work.

The school discipline of biology in particular provides pupils with a system of polytechnical knowledge on a scientific basis practically of all branches of modern agriculture and on the rational use of natural resources by man (husbandry,

cattle-breeding, fur-breeding, fish-breeding bee-keeping); on the use of micro-organisms in a number of branches of agriculture, on the role of organisms of plants and animals as pathogenic organisms and means to struggle against them. Studying botany, zoology, general biology, school-children both get acquainted with the basic biological laws of evolution of nature and learn how they are applied in the national economy, in the life of man. Within the limits of their forces and possibilities they, at the same time, acquire a certain scope of skills to apply the knowledge in practice, e.g., in agricultural production.

Some lessons are given at the places of work, for example, in anatomy and physiology — at the cattle-breeding farm, at the local transfusion station, at the veterinary stock specialist, for example, introducing the theme of different types of productivity of animals, remind pupils of the law of correlated variability taking as an example the connection between the development of mammary gland and other organs; they do not only refer to regulating functions of the nervous system and of the glands of internal secretion but explain why the intensive functioning of one organ, of the mammary gland, for example, requires the increasing functioning of other organs and the intensified metabolism, and they carry-out practical work to determine the productivity of cows, acquaint pupils with the factors influencing the raising of productivity. Then the pupils get informed of the specific character of the activity fulfilled by the farm workers.

In the process of studying of all biological subjects, in developing the general understanding of nature, in highlighting the questions of application of laws of the organic world in industry, in human practical activity active work is done to develop in pupils working skills and attitudes. To this end they carry out experimental and research tasks in laboratory and industrial conditions; they fulfil principal works taking care of plants during different periods of phenophases, define the requirements of plants in nutrients according to their outward appearance and with the help of special instruments, make experiments to find the best irrigation regimes, the best time and ways to dress the plants etc.; they fulfil works foreseen by the curriculum in agricultural work, on the school plot (in the fields and at the farms

of Kolkhozes and Sovkhozes); they work among young zoo technicians, agricultural technicians, biologists, microbiologists; in the production teams of pupils, in the school forestrics, in the camps of work and recreation.

Mathematics course provides mathematical knowledge and skill bases acquirement necessary not only for pupils' general development and their practical activity during training but also for the process of productive work (activities in workshops; socially useful labour). Polytechnical education is provided not only with its main content but with a great number of practical character tasks, graphic works, realization of inter-subject relations. It concerns numerous calculations done by pupils in the process of work, for example: definition of circumference and its parts cutting elements, gear ratios, and machine-tool cutting specifications — all that is based on the knowledge and skills acquired by pupils at maths lessons. The fact that pupils use a ruler, compasses, a drawing set square, a protractor, a drawing-board while constructing at mathematics lessons helps quick mastering of marking methods necessary for practical work in school workshops.

Acquirement of mathematics course provides great opportunities for fulfilling many other practical tasks like measuring works in the country (angle construction and measuring, segment division in two, gonio-meter survey through turning movement, definition of an inaccessible distance through congruous triangulars, plane-table survey of a lot plan, area measuring with precise evaluation of the results, distance and height definition through the solution of right-angled and oblique-angled triangles), diagram, scheme and concrete quantity dependence graph construction that reflects phenomena known to pupils.

Pupils' knowledge application, for solving various extreme problems under the theme 'Functions' using economics, biology and other fields of science data for calculation also presents some interest.

Teaching and educational work at school and introduction of productive work is realized differentially by age groups: first — third, fourth — eighth and ninth — tenth grades.

Children of first age level are provided with general notion about adults' productive work; primary labour skills are for-

med; teaching and educational work provides for mental, moral, physical and aesthetic development and cultivates diligence in children.

At the second age level in the close links with the study of the foundations of sciences, pupils are getting some notions about modern industry and main fields of production, technical, agricultural, domestic and other types of labour and appropriate knowledge and skill on which is based participation in socially useful and productive labour. The latter which according to its content requires at this stage preliminary specialized training of pupils is arranged directly at working places.

Natural sciences, technical and managerial principles underlying industry, agriculture, transport and communication are gradually delivered to the pupils of grades IV-VIII. They study mechanical, chemical, biological power and other processes and relevant technology as well as methods of obtaining and treatment of different materials.

At the second stage the vocational training is completed with generalisations applying to the technique, technology, administration and economics and production that are illustrated most of all by the functioning of engineering woodwork, electrotechnical, textile, clothing, agricultural and food enterprises.

At present, two different work-study programmes in 48 grades are being tested.

As the first version, the programme is differentiated for boys and girls. At the urban schools girls study service work and boys technical work. At rural schools girls study agricultural and service work and boys agricultural and technical work.

As the second version the programme of vocational training is common for boys and girls. As for grades IV-VI it is the following: pupils begin their engineering studies — 4 hours and get acquainted with certain elements of drawing — 2 hours, wood treatment technology — 14; fabric treatment technology — 18; electrotechnical work — 10 hours, besides that the programme includes introduction and conclusion. Under

each subsequent theme, the content is developing and getting complicated. All lessons and pupils' work results are of practical and as far as possible, of socially useful character. However, differentiation of technical and service work content for boys and girls is partly maintained in that unified programme in grades VII-VIII. It takes into account that the knowledge and skills which are significant for work at other subjects should be given to boys and girls on the same scale. For example, at vocational training lessons, all children get acquainted with electrical engineering elements and fulfil electrotechnical works. In the grade VII at physics lessons 'electricity' starts to be studied. It is quite natural that boys and girls should begin such studies having equal level of knowledge and skills.

In grades VII-VIII boys work with metal for 20 hours, wood for 20 hours, get acquainted with engineering studies — 6 hours, electrical engineering — 10 hours, elements of same grades, girls work fabric for 40 hours; food stuffs 12 hours; do electrotechnical work — 10 hours; get acquainted with engineering studies — 8 hours.

Being the sphere of inter-subject relations and knowledge transfer, inclusion of productive labour elements makes unlimited opportunities for application of comprehensive knowledge on the foundations of sciences, i.e., the same phenomena processes are examined from various points and pupils can realize the unity of the phenomena and processes that they are studying as well as their characteristics and quality diversity.

A certain scope of the types of work as a source of observation and practical information accumulation followed by subsequent theoretical training on the foundations of sciences are provided with the lessons.

Principle of differentiation and profession-oriented training is completely realized at the last stage (grades IX-X) when pupils work in a school productive centre (a training centre, a plant) and in industry and agriculture.

To select objects of work is exceptionally important. In our opinion they should be selected in view of socio-pedagogic, technological and economic requirements among which the main ones are:

1. Social significance of an object of work. A pupil should know what he is doing and for what purpose and how the product of his work will be used.

- Pupils should work to orders of enterprises and institutions. In this case, single and permanent contracts may be concluded.
- Pupils' awareness of social and productive significance of the work being done should be emphasized.

2. In the nomenclature of articles by pupils, psycho-physiological abilities of children at different ages should be taken into account. Technological operations and types of work should not only correspond to a child's psycho-physiological abilities but should further better the development of the very organism's psycho-physiological functions forming which is of special importance at a definite age. Conditions should be provided for pupils' early participation in productive work. Availability of small articles especially at secondary school how to carry out elementary operations allows them to participate in public production. Fulfilment of large-scale objects provides pupils with great opportunities for their acquaintance with different technological processes; relations of production impact on pupils' moral education is strengthening. Manufacturing of an article from beginning to end (naturally with a definite number of components) intensifies the educational impact of work on forming of pupils' personality.

3. The process of labour activity should be properly organized to foster in pupils a love for work and to form initial professional skills.

4. While selecting objects of work the process of work-training should be brought as near to the real industrial conditions as possible.

The content of work in all kinds of labour units is determined by the curricula. The labour activity of pupils at their working places in the plants, fields, farms, workshops, industries of produce processing is carried out in accordance with the productive work plan.

In grades I-III pupils are trained for work in workrooms, in nature-corners and on school experimental sites. In grades IV-VIII pupils acquire the initial knowledge of various kinds

of technical, agricultural and service activities. Their work is organized in keeping with the curriculum and school-plans of socially useful and productive work. In grades IX-X pupils are trained for work in school workshops and production units with a view to specialising in one or two trades.

Proceeding from the experience acquired in teaching pupils in rural schools in all areas of the country (Tractor and combine-harvesters maintenance, work on mechanized cattle-breeding farms and complexes) school curricula and syllabuses take into account particular local features and technical progress.

The combination of manual and mechanized labour on school experimental sites (and in the fields) contribute to personal development and progress.

There are various forms of production units to educate for work; school and inter-school workrooms, workshops, inter-school training centres, industrial-training plants, pupils' working brigades, school forestries, labour and rest camps, school teams which group pupils according to their personal interests.

As may be seen from the experience acquired in rural schools, pupils easily get accustomed to accessible for their age agricultural machinery. In grades V-VI they study plough, cultivators, seeding-machines; in grades VII-VIII pupils get to know the principles of work and maintenance of small tractors, mechanized ploughing, cultivation, the sowing of industrial and cereal crops. Such practical knowledge of popular agricultural trades, as machine-operator, plant-grower, cattle-breeder, agronomist, allows to solve efficiently the problems of vocational guidance.

According to work-training curricula about 75 per cent of all academic hours are spent on practical production work which is carried out mostly with the application of all necessary machinery. The pupils carry out processes and operations either of industrial or similar character. Thus, the organization of practical work aims at the pupils' familiarization with the labour conditions of a wide range of jobs. Moreover, the teachers use methods which help them to draw pupils' attention to the objects and skills of work necessary for the particular industry.

In the learning process, children are employed as part-time tractor drivers, mowers, hay-stackers, they take part in silo deliveries, harvesting, grain sorting, etc. In the spring time they are engaged in moisture conservation and in the sowing of spring wheat, vegetables and melons. The trainees decide themselves the question of job distribution and timetables. They work on special sites of land attached to their school, in the training team field or in the fields of collective and state farms. An important thing is that every team and every trainee is successively engaged in several types of activity.

The school-children begin to master production skills and techniques and to adopt a creative approach towards their work on their training and experimental land. The work there is organized so as to take into account the future productive activities.

Participation in spring sowing helps the trainees to learn tractor driving, trailer equipment operation, crops agro-technics; they learn the rules of machine operation and safety engineering. Participation of school children in hay-mowing entails their learning to drive tractors and to operate trailer equipment. During the harvesting, the pupils learn to operate a combine harvester, study safety arrangements and get to know the organization of harvesting.

Taking part in the preparation of equipment for the field work, the trainees increase their knowledge of the equipment design and maintenance. Those pupils who specialize in livestock breeding and mechanization, are employed as assistant milkmaids. They learn mechanized cow milking, participate in farm equipment maintenance in the autumn and develop their skills in operating various machines in winter,

A network of school societies is purposefully used to raise the level of job training. The members of the young physicists society, for example, get acquainted with the tractor electrical equipment and the young modellers design models of agricultural machines. The grades V-VII pupils study different types of engines in their engineers society. All this enables the children to get to know the technology better and to like it, to acquire technological skills even before they start to study the tractor operation.

In a number of schools, school-girls of grades V-VII are encouraged to help the grown-ups with their work on livestock breeding farms while those of grades VIII and IX raise younger domestic animals and poultry.

In training the school-children for productive work, great significance is attached to the invitation of the most experienced and skilled workers and experts in agricultural production to work as teachers and instructors. The cooperation of school-children with the staff of collective farms (or state farms) is of great importance. The best possibilities for enlisting the school-children's participation in productive work are provided by rural inter-school complexes. This can be illustrated by the example of the Gaivoron inter-school training and production complex of the senior grades school-children of the 13 schools of the region. The course consists of six classes. The pupils of each school attend the complex once a week. The grades IX and X pupils are trained at the complex as professional drivers, tractor drivers of the third class, livestock farm engineers, specialists in agricultural machinery and basic agrotechnics, basic livestock breeding and mechanization of livestock farms, vegetable farm engineers, electrical engineers, joiners and machine operators, secretaries and typists, wood-carvers, turners, auto-mechanics, dressmakers, assistant agrochemists, cooks and builders (specialized plasterers and bricklayers).

The types of training are determined by the regional workforce requirements. The problem of the future trade selection and mastering by school-children is solved much more successfully at the complex than at school. This can be explained by a wide variety of trades to master as well as by a large network of different technological and natural scientific societies where every pupil is provided the possibility to increase his knowledge and to acquire new skills and abilities. Young mechanics and naturalists' stations comprising more than 30 various societies are organized directly at the complex.

The complex has five school and production buildings which house three workshops: metalworks, woodworks and dressmaking as well as several classrooms, those of service facilities, construction, primary school technological acti-

vities, professional orientation and agrochemistry. There are 17 laboratories at the complex which help study automobiles, tractors, agricultural machinery, livestock farm equipment and electrical and radio equipment.

The workshops, laboratories and classrooms are equipped with teaching aids which meet the production ethics and safety requirements.

For the purpose of practical studies and educational and production practice the complex has a sufficient number of automobiles, tractors, agricultural machines. The teaching and practice facilities of the complex are constantly developed and increased. The classroom and laboratory equipment and visual aids are made by the pupils themselves during their creative activities in societies as well as by their teachers and vocational training instructors.

The concentration of budgeting as well as funds raised from the sales of goods produced at the complex make it possible to spend considerable sums on the expansion and maintenance of teaching and production facilities, acquisition of equipment and provision of three free meals a day for the pupils.

The 'Sputnik' experimental and training farm organized at the complex covers an area of 88 hectares. A pond and several small livestock farms are built on an area of 10 hectares which is not suited for crop rotation. During the summer vocation it is the site of a labour and recreation camp.

The aim of the planning and organization of studies at the complex is to provide the pupils with a system of knowledge, practical skills and habits necessary for a modern production worker.

The maintenance of education at the complex include lessons, laboratory, practical and individual classes, as well as production practice. The teachers largely employ the elements of a system combining lectures with practice, seminar classes and credit examinations.

Great attention is paid at the complex to the use of technical means of education, various visual aids showing the cross-section of units and mechanisms, natural samples, operating models, mechanized stands, etc.

Based on the careful examination of the pupils' individual inclinations purposeful work is done in the field of the professional orientation of the pupils. For this purpose a club of professional orientation was established at the complex, where the pupils get to know the peculiarities of various jobs, the requirements that those who work in those fields have to meet, receive exhaustive explanations as to the peculiarities of these jobs, its conditions and remuneration.

To train school-children for socially useful and productive work means to lay the foundation of moral health and harmonic development of man. This is a problem of great social importance.

The socialist society of the nation not only entitles school graduates to a choice of profession according to their inclinations, skills and abilities but also creates the necessary conditions for their successful labour education; it does everything possible to make their start in grown-up life confident and purposeful.

9. VOCATIONAL EDUCATION IN THAILAND

Problems in the formal school system which emphasize the need for work-oriented education may be found in inadequate preparation of graduates or drop-outs, inflexible curriculum structures, inadequate inputs, i.e. facilities, equipment and staff, or unrealistic occupational goals of school leavers. We may examine these problems by level as follows:

1. Primary School Level

Primary education, whether by design or not, is in fact terminal for a large number of pupils, at p. 414 level in rural and at p. 7 (will be p. 6 in the new scheme) in urban communities. Many even drop out before these levels have been reached. For this reason primary education has to aim, in addition to other goals, at terminal courses which prepare children for the world of work by exposing them to "manual work" or "practical education", hoping to instil in them skills, work habits, and an appreciation of the dignity of manual labour. In practice the process of screening, selecting, grading and preparing children for the next level of education completely dominated the teaching-learning activities, which results in rote learning and tutoring for examinations.

The possibility that some pupils may have profited by the little bit of practical education some primary schools are able to provide has been discounted by the ARTEP investigators. They feel that functional literacy, along with habits of punctuality and respect for authority inculcated by formal schooling, is much more important as a base for further training than any practical training at this tender age can be. This conclusion is probably due to the fact that most primary schools are badly equipped in terms of shop facilities, equipment and staff, so that they offer practical training in name only. The following is ARTEP's observation:¹

1. "Asian Region Team for Employment Promotion," Report I, *op. cit.*, p. 61.

.... Those who finish p. 4 or p. 7 education have learned little that could be of possible use to them in their future occupations:

(i) The teaching of practical subjects (between p. 4 and p. 7) is not widespread and in general is poorly done, owing to lack of student interest and apprehension, lack of interest and knowledge of teachers, impractical syllabi, lack of funds, and other constraints.

(ii) That the teaching of social sciences contributes to the appreciation of manual work, especially farming, seems unlikely since both teachers and children know that such work is not particularly rewarding; in fact the latter go to school to escape from it, and the former have just done so.

(iii) Children are not exposed to work situations, nor are representatives of the working world invited to talk about their work.

One possible solution to the negative results found in primary education is implicit in point (iii) above. It is observed that there is nothing wrong with the concept of combining education and work as offered in the form of practical training in primary schools in Thailand; what is wrong is the fact that things have been poorly done. Improvement of the present effort to combine education and work experiences at the primary school is urgently called for.

2. Lower Secondary Level (M. S. 1-3):

The lower secondary schools have been organized along two streams: general and vocational. The lower vocational schools have now been completely phased out, leaving only the general secondary schools at this level. In 1960 a new type of secondary schools, the so-called "Comprehensive school", was added. These schools now number 108. Their enrolment (lower secondary only) accounts for about 23.82 per cent of the total enrolment for all government lower secondary school.³

2. M. S. stands for Mathayom Suksa or Secondary grades.
3. Private lower secondary schools enroll about 27.92 per cent of the total enrolment at this level.

The Regular Secondary Schools

In the general secondary school curriculum, which is being phased out beginning in 1978, there are four areas of practical arts being offered, namely agriculture, business education, home economics and industrial arts. Four to six hours per week are allotted to these subjects. This time allotment is compulsory for all schools which offer two or more areas of the practical arts. Most schools, however, are able to offer only two areas for four hours per week while the remaining two hours are added to English, thus increasing time allotment for English from four to six hours. With the four-hour compulsory time allotment for at least two areas of practical arts, one would think that there is a great deal of effort being put in combining education and productive work experiences at this level. The fact is that the majority of the general secondary schools are not adequately equipped or staffed with qualified teachers to offer the practical arts effectively. Out of approximately 1,200 government secondary schools, excluding comprehensive schools, only about 350 are relatively well equipped, the rest have practically nothing in terms of shop facilities and equipment. The situation in the private schools is even worse, for private schools of the general type rarely invest in school shops or equipment.

Another problem has to do with the curriculum. Even though four hours per week are allotted to practical arts, there is a restriction in the curriculum which prevents the schools or the students from changing courses. For example, if the students take agriculture in the first year, they must continue to take agriculture in the second and in the third years regardless of whether they like it or not. This inflexibility has been corrected in the comprehensive as well as in the new lower secondary curriculum of 1977.

The Comprehensive Schools

The comprehensive schools, on the other hand, are rather well equipped through external assistance and staffed with relatively well qualified teachers. The stated purpose of these schools is threefold: (1) to prepare academically talented students for further education in the upper secondary schools, general stream; (2) to prepare vocationally-oriented students for vocational schools; and (3) to terminating stu-

dents with skills of a pre-vocational nature. The problem here is that the terminal function of the comprehensive schools has no significance, for virtually all of their graduates want to continue in any available avenue of schooling, and in fact most of them do. The factors influencing this trend are probably that: (a) the majority of the comprehensive schools are located in large provincial cities where most students, in any type of school, tend to continue their schooling and that; (b) practically all of these schools have upper secondary classes which seem to attract graduates of the lower level to continue rather than to terminate. This phenomenon, however, is not unique to the comprehensive schools. Even specialized vocational schools which are obviously terminal in design turn out graduates, the majority of whom continue their schooling at the upper level. It seems that in the Thai educational system there is always a next level for students to continue their education and postpone their entry into the labour market.

The comprehensive curriculum introduced in 1967 is much more diversified and flexible than the curriculum of 1960. It provides the students with one year of exploration, in which all students are required to take all areas of practical arts offered by the school for eight periods a week. In the second and third years practical arts courses are offered as elective subjects. The idea of having practical arts as compulsory exploration in the first year seems to be based on the assumption that after one year the students would be able to choose practical arts electives according to their interest and ability. But it has been found that the majority of students tend to choose academic electives in preference to the practical arts.⁴ The obvious explanation for this tendency is that, since most students plan to continue their schooling at the upper level, many of them prepare themselves by taking the prerequisites which invariably are courses of academic nature. In terms of training for employment the ARTEP team found that the comprehensive graduates do no better at the vocational schools in which some of them continue their schooling since few of these students, having gone through comprehensive and vocational schools, end up in industry or commerce.

This conclusion is debatable since one cannot readily see whether the problem lies with the comprehensive or the vocational schools until one has taken a look at the vocational schools, their shortcomings and potentials.

Even though many comprehensive school students do not elect practical arts courses in the second and third years and many of them do not terminate, this does not mean that the offering of practical arts in comprehensive schools should be discontinued, for they do serve some functions. For one thing, comprehensive schools have not been designed solely for terminating students; they also prepare students either to further their education in the stream suitable to their interest and ability, or equip them for the world of work which some of them have to enter. For all of the graduates, the study of pre-vocational subjects has considerably improved their chances of finding good careers, as well as their judgement on what they would like to do — to take up what type of further education or to enter which occupation.

3. Upper Secondary Level

There are two types of schools at the upper secondary level; the general secondary school and the vocational school. In the school system being phased out, the general secondary school is of two years' duration, while the vocational school is of three years. Both will be of three years' duration in the new system.

The General Secondary Schools (M. S. 4-5)

The present upper secondary curriculum is diversified to a larger extent than the former one. It offers not only academic but vocational programmes as well. These vocational programmes which some people prefer to call prevocational are more effectively offered in comprehensive schools than in others simply because the former are better equipped than the latter. The vocational programmes generally offered are business education, home economics, industrial arts and agriculture. These are supposedly terminal in purpose, but because of the accepted practice of requiring a certain type of certification for employment, especially for entering government service, many graduates of the vocational programmes continue in the vocational school for one additional year to

get the necessary certification. For those students who want to enter occupations which do not require formal certification, or those who want to go into self-employment, the two-year exposure to practical experiences is sufficient. The only problem left is for the majority of the upper secondary schools to better equip themselves if they want to combine education and work experiences more effectively. This is definitely impossible to implement in the immediate future, because the political and social demand for quantitative expansion usually gets priority attention from decision-makers and politicians. Therefore, alternative methods such as "job centres" will have to be employed.

The Vocational Schools (M. S. 4-6)⁵

Vocational schools at the upper secondary level are grouped into three categories: trades schools, commercial schools and agricultural schools. At this level, there are also teacher training colleges (lower certificate level), schools of music and dramatic arts, and other specialized schools run by various government agencies for the purpose of training their own future employees. All of these schools belong to the public sector. In addition, there are a large number of private vocational schools which are regulated by the Ministry of Education.

Vocational schools have many weaknesses,⁶ some of which can be examined as follows:

The main objective of the vocational education is to train students in specific skills for immediate employment, which means that each level or each course has a terminal aim. In practice, however, the majority of the vocational school graduates continue to further their training at a higher level or course. This problem is a result of many factors. Firstly, the students seem to have developed higher expectations in terms of the conditions of work and salary level than those normally found in the Thai employment market. Secondly, when their expectations are frustrated the graduates continue

5. M. stands for Mathayom, a secondary grade in the new educational scheme.

6. Kunio Sato, *An Alternative Approach to Vocational Education in Thailand*, 1974, p. 36-51.

their education in the hope that higher qualification would fetch them a better job and higher remuneration. Thirdly, the supply of graduates and the type of their training do not readily meet with the changing requirements of the industries concerned. It is perhaps better that instead of trying to qualify the students for specific jobs, vocational education should aim at preparing the students for further direct employment related training. This suggests that students should be exposed to general skill training rather than specific training in any narrowly specialized trade.

The selection of students, initially as well as later when students are to enroll in specific programmes, needs to be improved. Entrance examinations, which are necessary since there are generally more applicants than the schools could accommodate are based principally on academic achievement tests. Some schools now have introduced aptitude tests and personal interviews by shop instructors. This practice should be encouraged for all schools to adopt.

Assignment to specific trade training is usually done at the time of admission, using the entrance examination scores as the basis. This assignment should not be done until students have had the opportunity to explore their interest and aptitude by taking a multi-trade course as is now done by some institutions. This selection procedure would result in graduates having more realistic inclinations and a firmer commitment towards specific programmes than at present.

The lack of working experience for the majority of vocational teachers is a serious problem. The present practice of recruiting only formally qualified people as vocational teachers has to be corrected, especially for shop instructors. More hiring of people with industrial experience or people with both formal training and industrial experience should be attempted. For teachers already in the system, an arrangement should be made to require them to put in some work in industry. And for the present vocational teacher training, substantial work in industry should be a compulsory part of the curriculum.

Vocational students also lack work experience. Work experience of any sort is not part of the curriculum. In some schools only field-visits to nearby factories are made. Very little effort is being made by the schools to arrange for stu-

dents to have field experience either during the course or even during the holidays. Such arrangements are of course difficult, because most of the schools with the exception of agricultural schools are not located near places where work experience could be gained. This leads to another problem which makes work experience arrangements more difficult — that is, all vocational schools of the same type offer the same range of programmes regardless of where they are located. Thus, many schools are offering courses which have no local industrial or commercial counterparts.

COMBINING EDUCATION AND WORK FOR OUT-OF-SCHOOL POPULATION

1. Types of Programmes

At present educational and training activities for out-of-school population in Thailand are offered by many governmental and non-governmental agencies, in various forms depending on the objectives and functions of the agencies concerned. These activities or programmes may be grouped into three categories as follows:

Basic and General Education Programmes: This type of programmes provides an education for personal development, for good citizenship, and for everyday living. It is for the people who have not had the opportunity to get this type of education through formal schooling, and for the people who have had some but need to enrich their life or to prepare themselves for further education. The programmes offered include functional literacy and equivalency or continuing education programmes. All of these are offered by the Ministry of Education either directly or with co-operation from other agencies. In some instances the Ministry of Education assists other agencies in offering these programmes through the provision of teaching staff or operating funds, i.e., the programmes for inmates in penal institutions and the programmes for hill tribe people.

Vocational Training Programmes: These are short courses designed to provide occupational skills either in the form of pre-employment training or in the form of upgrading work. The programmes vary according to the types of occupation or trades being offered or according to the background and

interest of the trainees. They may be complementary to formal schooling so that graduates of formal programmes could obtain some occupational skills for their livelihood; they may be for people who are already working so that they could upgrade their skills. Trainees can get this type of training by attending the courses in the multi-trade schools, the mobile or stationary trade training units, the skill promotion training establishments, or through special-interest courses organized on an adhoc basis.

This type of out-of-school programmes is organized into courses whose periods of training may be very short (5-10 hours), or of medium length (100-300 hours), or longer (3-6 months).

Information Services: This type of programmes comprises of dissemination of information through such informal means as public libraries, newspaper reading centres, posters, periodicals, circulars, audio-visual units, radio and television broadcasts, etc.

2. Programme Content and Methodology

The content and methodology of certain out-of-school programmes need to be examined to see how, if at all, education and work experiences are combined. The following programmes are selected on the basis of their coverage and the length of time they have been in operation.

Functional Literacy Programme: The objectives of this programme are fourfold: good citizenship, problem-solving skills for everyday living, knowledge and use of community resources, and literacy skills. The methods of achieving these objectives are mainly based on group discussions and exercises, usually in a primary school class-room or in a temple. The conductor of this programme may be a school teacher, a community volunteer, a teacher trainee or a monk. The course is offered three days a week for six months to obtain a total of 200 hours' required.

The main objectives here seems to be literacy for rural adults. Since most of the instruction occurs in the evening when the people are free from their daily cores, the methods used are generally formal class-room procedures, the facility can be any place where people could come together, and the

instructor is not usually qualified, it has taken very little effort to combine education and work experiences in this type of programme. However, there are many possible ways for the instructor either to take the learners out to the field or to bring resource persons to the class-room, instead of conducting the learning process entirely through discussion and reading exercises.

Continuing Education Programme: This programme has been organized to serve youth and adults who are not able to enroll in the formal school system. Graduates of these courses are given certificates equivalent to those of the regular levels. All courses are offered in the evening using regular school facilities or other buildings belonging to the public as well as private organizations. The following courses are available:

a. Lower Primary education.

- (i) Fundamental education, with two levels equivalent to p. 2 and p. 4 respectively, each requiring six months to complete, is offered in every adult school except where functional literacy programmes are in operation.
- (ii) Levels 1 (p. 1-p. 2) and 2 (p. 3-p. 4), lasting six months each, are offered in urban areas mainly for youth who intend to continue their education at higher levels.

b. Upper primary education. Level 3 (p. 5-7) requires 1½ years to complete.

c. Lower secondary education. Level 4 (M.S. 4 6) is also of 1½ years duration.

d. Upper secondary education. Level 5 (M.S. 4-5) has a similar curriculum to that used in formal school classes of the same level.

These curricula are presently undergoing revision. They are being changed in content and style from an academic nature to a functional nature starting with level 3 and continuing to levels 4 and 5 eventually. The stated purpose of this revision is to make them relevant to the conditions and problems in the everyday lives of the learners; to encourage adults

to master the problem-solving method; and finally to induce adults to develop their creative ability.⁷

It is apparent that the courses described above are actually formal general education courses offered in a non-formal setting, not only to adults but to anyone who needs equivalency education especially at levels 4 and 5. Many of the students who enroll in these courses are school students because of the lack of space in regular secondary schools. And since the duration of the courses has to be shortened and facilities are to be shared with regular schools, teaching and learning has to be somewhat condensed.

Only comprehensive schools are able to offer non-formal classes of a vocational nature. The stated policy for the future development and expansion of these courses is to vocationalize the curricula in order not to be the mirror image of the day-time general education programme. This policy could be readily implemented by offering more of these non-formal courses in the existing vocational schools in the evening.

Interest Group Programme: The interest group programme has been organized to provide training, on request, to any group of people on any subject which the Adult Education Division of the Department of General Education can organize effectively. The topics for group study are based on the problems, needs and interests of the people who sign up for the course so that what is studied can provide knowledge and experience necessary to help themselves and their community. The duration of the course is flexible and can be as short as five hours and up to a limit of 30 hours depending on the topic.

Interest groups could be organized in two ways. One way is to survey the interests and needs of the people, then to organize a group of at least 15 persons with common interests, and provide an appropriate resource person. This way the organizer will take the initiative to form a group, prepare the curriculum and administer the programme. In another way, the initiative will come from the people themselves. A group of people, not less than 15, with common interest can submit

7. Adult Education Division, Adult Education in Thailand, 1976, p. 14-16.

their request to the authority to provide the desired course. The group may themselves suggest a suitable resource person. Since the course is limited to 30 hours the group must be precise about their needs. For example, a group of farmers may wish to know how to choose fertilizers, how to castrate pigs, how to grow mushrooms, how to manage farm, etc.

From the above description it is obvious that this type of non-formal programme offers unlimited opportunities to combine education and work experiences since the programme must meet the practical needs of the people who enroll in it. The programme is flexible in duration and can be arranged wherever the facility and equipment necessary for the topic to be studied are available, which could be at the school, in the temple, on the farm, at the home of one of the participants, or in a private business establishment.

Vocational Training Programmes: There are several programmes for out-of-school population, in which education and work experiences have been purposefully combined. Some programmes are strictly for pre-vocational training; others serve both pre-vocational and upgrading training. Some are located in urban areas thus serving only urban population; others are movable or mobile thus capable of reaching people in remote areas. There are many programmes operated by various agencies. Some of these have vocational training as a main objective, while others may see it as a by-product or as a secondary objective. Only six of these programmes will be discussed here. These are selected because of their wide coverage and because they are primarily educational or training institutions.

a. **Stationary, Adult Vocational Schools** offer vocational training to out-of-school youths and adults using facilities of the secondary vocational schools in the evening. These schools are operated by the Department of General Education as a part of its adult education function. They cover the whole of the kingdom, but are situated mostly in urban areas. The duration of the courses in this programme varies from 100 hours to one year depending on the type of courses which number 25. These courses are distributed under four main areas; industrial arts, home economics, business education and agriculture.

b. Movable Vocational Units are also operated by the Department of General Education. They are small units which operate in distant villages as long as they are needed and then move to a new location. They open for classes during the day time from 09.00 to 15.00 hours. The duration of the courses offered varies from 150-300 hours. Courses usually offered are dressmaking, barbering, cosmetology, mechanics and agriculture.

c. The Mobile Trade Training Schools, on the other hand, are mobile units serving larger communities. The Department of General Education operated these units from Bangkok. There are now 45 such units spread throughout the country. The subjects offered are mostly trades and industry courses, i.e. mechanics, radio repairing, electrical repairing, welding and the like. The class hours are divided into three sessions. The morning session runs from 09.00 to 12.00, the afternoon from 13.00 to 16.00 and the evening from 17.00 to 20.00 hours.

d. Multi-trade or Polytechnic Schools have been developed to offer non-formal vocational training to out-of-school youths and adults. The only requirements for admission are that the applicants must be at least 15 years old and that they must be literate. The programme objective is to train semi-skilled and skilled workers in four main areas: Industrial trades (machine shop, welding), graphic arts (printing, photography), crafts (dressmaking, cosmetology), and business courses (book-keeping, typing, secretarial). While the full programme is not offered at all times by all schools, the programme at every school does provide the public with a wide choice of courses. The basic programme operates three 15-week terms per year, plus a 4-week summer school. These courses are considerably shorter than the standard Mobile Trade Training School courses and are further distinguished by being able to adjust course length to the requirement of content and market demand.

At present there are ten multi-trade schools in Thailand, four located in Bangkok and the others in up-country urban centres. These schools are operated by the Department of Vocational Education as a part of its contribution to providing vocational training on a non-formal basis.

e. **National Institute for Skill Development** and three regional centres are operated by the Department of Labour of the Ministry of Interior. They have five training functions as follows.

- (i) Pre-employment training;
- (ii) Apprenticeship training;
- (iii) Upgrading training;
- (iv) Instructor and foreman training;
- (v) Service industry training.

f. **Non-formal Vocational Training in Private Institutions** covers a wide range of occupations from dressmaking, cosmetology and typing to management. Much of this training operates on a small scale in a multi-purpose one-room shop. But since the enrolment as shown below was 100,000 in 1976, such courses represent notable training opportunities for out-of-school population, and they are well distributed in practically all cities and towns.

Number of Units, Staff and Enrolment of Selected Training Programmes for Out-of-school Population.

<i>Activity</i>	<i>Number of Institutions</i>	<i>Number of Staff</i>	<i>Enrolment</i>
1. Functional Literacy	397	425	10,313
2. Continuing Education	1,127	13,794	177,796
3. Evening Vocational	231	882	18,672
4. Movable Vocational	77	173	5,415
5. Mobile Trade Training	45	411	20,139
6. Multi-trades Schools	9	245	9,202
7. Private Schools	1,382	3,842	100,086
8. Interest Group	n.a	n.a	31,000
9. Skill Development	4	121	5,671

(Sources: The Ministry of Education and the Department of Labour.)

3. Priorities and Targets

The three main types of educational activities for out-of-school youth and adults mentioned earlier in this section are:

- (1) basic and general education programmes (literacy and con-

tinuing education), (2) vocational training programmes, and (3) information services. In terms of coverage, the third programme seems to be the most important; but in terms of the increase in the participation rate projected for the Fourth National Education Plan, vocational training programmes are of highest priority. This is the more appropriate because vocational training programmes seem to offer the best opportunity for combining education and work experiences. Therefore, the more rapidly these programmes are expanded the better for out-of-school youth and adults. However, since a great number of people are enrolled in literacy and continuing education programmes, there should be a greater effort in trying to offer practical experiences along with literacy and general education normally offered in these courses. At the same time educational planners should look seriously into the third type of programme, which is informal in character, to see how education and work experiences could be combined there. At present, aside from giving occupational information and the "how to do" through print and news media, very little concrete effort has been put forward.

The target group for many non-formal programmes is the 15-25 age range. This should be reconsidered in the light of the policy as stated in the National Educational Scheme which proclaim that "The State shall step up and promote various kinds of out-of-school education in order to make available life-long education to all, especially to those who missed the initial formal schooling". This statement outlines two objectives: that education is a life-long process, therefore the state should offer educational opportunities to its citizens not particularly at any time of their lives but throughout their lives; and that if any priority group is to be designated, the people who missed formal schooling should be taken care of first.

The distribution of educational services is another topic to be considered. Its importance could not be over-emphasized, for equality of educational opportunities has been a major policy goal for the Government. The implementation of this policy has a poor record according to enrolment figures given above. The enrolment data do not clearly show the proportion between rural and urban participation rates; but if one studies each programmes carefully, one can see that with the exception of programmes 1, 4, 5, and 8 the enrolments in

non-formal programmes are mostly from urban population. The implication here is that many of the programmes, thus far catering heavily to 'urban populations because of their nature and their physical locations, may have to be adjusted so that their services could be available to rural populations as well.

10. VOCATIONAL EDUCATION IN MALAYSIA

1. Pre-vocational Education

Pre-vocational education was introduced into the secondary school system in 1965 in an effort to provide some basic information and knowledge of technical and vocational education and prepare the pupils to understand the modern world of work.

This pre-vocational education consists of 4 electives, namely, industrial arts, agriculture, commerce and home science. It is different from traditional handicraft courses which were conducted primarily to teach manual and artistic skills. Pre-vocational education is also different from vocational education in that it is not a preparation for employment in an occupational field.

The 4 electives were designed as part of general education in the lower secondary classes. They were intended primarily to serve as a general introduction to the world of modern technology, while at the same time instilling in the pupils some basic theoretical concepts and affording practical experience in the use of tools and materials in the technical, agricultural and commercial fields. It was also hoped that pupils will develop useful habits and attitudes and be guided in selecting a suitable vocation. The electives were, however, not meant to train pupils in specialized skills, as in vocational education.

The teaching of electives has given the pupils a greater appreciation of the nature of the modern world of technology. It has also helped to guide students in the lower secondary classes with the right interest and aptitude into vocational and technical schools at the upper secondary level. More and more pupils are now seeking to pursue courses in technical and vocational areas, as the prejudice against manual work is slowly being removed.

A more detailed account of this pre-vocational education programme is given in the second part of this report under "Project Reports".

2. Vocational Education

The Ministry of Education provides vocational education to suitable students who have completed lower secondary education. Although the main aim of vocational education is the development of employable skills in students they are also given general education such as languages, social studies, science and mathematics. The vocational education course is a two-year full-time one, at the end of which students offer themselves for the Malaysian Vocational Certificate Examination. Vocational education is provided in separate secondary vocational schools.

Within the school system itself, practical arts such as book-keeping, basketry and elementary woodwork were taught in some primary schools in the early nineteen twenties. But it was not until 1926 that the first Trade School for Craft Education was established in Kuala Lumpur. Three similar Trade Schools subsequently opened in Penang, Ipoh and Johor Bahru. These schools provided a three-year course for the training of mechanics, electricians and carpenters, at post-primary level, i.e., after six years of primary education. In 1946, the name of Trade Schools was changed to Junior Technical Trade Schools.

The admission requirement to Junior (Technical) Trade Schools was raised to three years of lower secondary education in 1960 when the recommendations of the Education Review Committee were implemented. The schools were also renamed "Secondary Trade Schools" as recommended by the Report.

With the introduction of comprehensive education in the lower secondary schools in 1965, additional vocational courses were introduced such as Industrial Arts, Agricultural Science, Commerce and Home Science.

The Rural Extension Schools also offered vocational courses of three years' duration in metalwork, carpentry, brickwork, vegetable farming, poultry farming, animal husbandry and rubber tapping. Two such schools started in 1957 and this figure increased by 1964, to 13 schools catering for

about 1,200 students. The completion of 6 years of primary education was the admission requirement. At the end of the three-year vocational course, the students took the Lower Certificate of Education Examination or continued their studies in the Secondary Trade Schools, they were renamed "Secondary Vocational Schools", with about two-thirds of the time allocated to vocational subjects and one-third to general education. In 1971, the curriculum was further revised to increase the skill of the students, and the time for vocational subjects was increased to about 75% of the total schooling time.

Vocational Schools: The objectives of Secondary Vocational Schools is to provide the commercial and industrial sectors with manpower equipped with basic skills and knowledge at the craftsman's level. The curriculum relating to vocational content is kept very flexible and broadbased so that courses can reflect the changing needs. The Secondary Vocational Schools provide education and training to students in four areas:

- Engineering trades;
- Agriculture;
- Commerce;
- Home Science.

These schools normally receive students who do not intend to continue schooling beyond the upper secondary level (eleven years of schooling) and plan to seek employment as craftsmen and operatives in the above-mentioned economic sectors of the country. These students are in many cases those who have not scored very high in the Lower Certificate of Education Examination.

Students in these schools choose one practical skill area to study in addition to the general subjects. The practical skill areas are as follows:

- Carpentry and joinery;
- Bricklaying and masonry;
- Sheetmetal work and welding;
- Machining and fitting;
- Automechanics (petrol and diesel);

Refrigeration and airconditioning;

Electrical installation practice.

Agriculture — comprising of:

Crop production;

Ornamental horticulture;

Soil management;

Livestock production;

Farm management;

Farm tools and machinery.

Commerce — comprising of:

Shorthand and bookkeeping;

Commercial practice;

Typewriting.

Home Science — Course A:

Nutrition;

Cookery, cottage industry and catering;

Mothercraft and child care;

Elements of commerce.

Home Science — Course B:

Needlecraft and tailoring;

Beauty culture and hairdressing;

Laundry work;

Elements of commerce.

The general education component in these schools is made up of the following subjects: Bahasa Malaysia (national language); English language; Mathematics; Science; Social Studies; Religious instruction. Of the school time, 73 per cent is devoted to the teaching of the technological subjects, 15 per cent to the teaching of mathematics and science, and 12 per cent to the other subjects. On completion of the course, students from these schools seek employment. However, a small percentage of the top performers go in for future studies.

These schools are located in areas of agricultural, industrial and commercial centres. This is to allow the stu-

dents to be near the areas where their particular technical skill is being employed. This not only helps the students to gain first-hand knowledge of the working conditions but also allows them to seek employment. In order to help students who may come from distant areas, the schools provide boarding facilities.

The Ministry of Education through its Technical and Vocational Education Division prepares a common curriculum for the Vocational Secondary Schools and provides the same type of equipment to them. Time allocation for the study of the various subjects is also centrally determined. Training of teachers and instructors is also carried out by the Technical and Vocational Education Division and the Teacher Training Division of the Ministry. Research and evaluation in technical and vocational education is done on a very small scale through the cooperation of the Technical and Vocational Education Division, the Educational Planning and Research Division and the Federal Inspectorate of Schools.

The main trend in technical and vocational education is towards making such education available to all segments of the school population. In keeping with the principle of life-long education, the Ministry tries to provide general education along with occupational skills. This is to ensure that students who have decided to opt out of the general education stream are not confined to a life of just labouring at a particular job without being able to improve themselves.

New teaching technologies are being tried out and attempts are being made to relate the Science, Mathematics and Language studies to the technological skills being imparted. A definite attempt at doing away with compartmentalized teaching of the various subjects is being made.

In the development of skill training syllabi, attempts are being made to increasingly involve the people in the various industries. This implies not only finding out what kind of skills the industries need, but also what kind of attitudes and outlooks the community as a whole requires.

3. Technical Education

The Technical School is an upper secondary school, offering courses with a science and technical bias to students who

have passed the Lower Certificate of Education with creditable grade 'A' certificates and who show an aptitude for an education with a technical bias.

The objectives of the Technical Schools are:

- To provide basic technical education to enable the students to seek employment in industry or to further their education in higher technical institutions up to the university level;
- To provide scientific and technical education to students with an aptitude for such subjects and to foster and maintain that interest;
- To raise the level and standard of skilled manpower in the expanding industrial and commercial sectors in the country.

Four types of technical courses are offered by the Technical Schools. They are:

- Building course;
- Mechanical course;
- Commerce;
- Agriculture.

In the both Building and Mechanical Courses, students are required to do at least two and a half hours of practical work per week. In Mechanical Engineering Workshop Practice, for instance, students are given practice in the use of Bench and Fitting Tools and are expected to reach a certain level of proficiency in the operation of various machine tools, such as the lathe, shaping and milling machines. Approximately an hour and half a week is spent on theoretical work, covering topics such as hand tools, machine tools, forging, machining, fitting, lubricants and heat treatment, etc.

In Building Construction, students learn such skills as the use of hand tools and the operation of various wood-working machines such as bend saw, surface planer, etc; various types of bends, arches and spires in brickwork. About one and a half hours is devoted to the theory of Building Construction covering topics such as bends and arches; foundations; construction of floors, roofs, staircases; painting, and plumbing. Surveying includes both theory and field

work. Students are taught to handle surveying instruments such as the chain, prismatic compass, the plane table, dumpy level and the theodolite.

Two commercial subjects may be taken, namely, Commerce and Principles of Accounts. These two subjects are an extension of the Commercial Studies at the lower secondary level. Commerce includes structure of the business world including retail, wholesale, import and export, insurance, banking, advertising and transportation. The Principles of Accounts include the application of the double entry principle to present-day recording to business transactions.

In the Agricultural Course, a new syllabus was introduced in 1972 and this subject is a continuation of the lower secondary Agricultural Science. The course generally covers the various fields of Agriculture like Crop Production, Livestock, Soils and Machinery.

Teachers, Enrolment and Facilities: The Technical Schools are equipped with specialized facilities. Well-equipped laboratories are available to meet the requirements of the current syllabus for the teaching of Chemistry and Physics. There are also fully equipped workshops for Mechanical Engineering Practice, Woodwork and Masonry. Large and well-equipped drawing rooms are available for technical drawing practices. For surveying the schools have a complete range of instruments and equipment 'necessary for the teaching of this subject.

Technical schools have been expanding and there are 11 schools today. The expansion and enrolment of Technical Schools is shown below:

<i>Year</i>	<i>No. of Schools</i>	<i>Enrolment</i>
1968	3	
1972	4	1,357
1977	9	2,116
		5,430

Teachers for the Technical Schools are for the most part university graduates. They are engaged mainly in the teaching of Mathematics, Science and other general subjects. Technical subjects are generally taught by Diploma holders of the National Technical University and by teachers trained

at the Technical Teacher Training College. Commerce and Agricultural Science are also taught by university graduates.

4. Polytechnic Education

There are two polytechnics in Malaysia. The first polytechnic was established in 1969, and the second in 1976, for the purpose of training technicians and junior executives in the engineering and business enterprises, respectively.

The technician in Malaysia as everywhere else in the world is expected not only to be skilful in the practice of his field but also to have sufficient theoretical background knowledge to enable him to serve as a useful link between the engineer and the craftsman. Hence at the polytechnic every endeavour has been made to provide the students with as much practical and laboratory work as possible and this is sufficiently balanced by classroom teaching.

In addition, polytechnic students also undergo a six-month industrial training period immediately after successful completion of the first year. The industrial training is carried out in private and government industries all over the country. This training is to enable each student to experience the actual working life and to appreciate the application of engineering and management knowledge in industry. At the end of the industrial training each student submits a report of what he has done. This is taken into account when his overall performance is considered at the end of the final years.

Courses: The polytechnics provide full-time courses in engineering technologies and business studies. Normally the courses are of 2 years but the course in accountancy is 3 years. Certificates of the polytechnic are issued to candidates who successfully complete the courses. The 3-year course in accountancy leads to a diploma.

The courses provided are as follows:

- Electrical engineering (Power);
- Electrical engineering (Electronics and communications);
- Electrical engineering (Industrial instrumentation and control);
- Mechanical engineering (General);

- Mechanical engineering (Production);
- Mechanical engineering (Automotive and diesel);
- Mechanical engineering (Airconditioning and refrigeration);
- Mechanical engineering (Marine);
- Civil engineering (Construction);
- Civil engineering (Public works and hydraulics);
- Civil engineering (Architectural drafting);
- Business studies (Malay medium);
- Business studies (English medium);
- Accountancy.

The qualifications for admission into the polytechnics are the Malaysian Certificate of Education or the Malaysian Vocational School Certificates.

Although the polytechnics are specially designed to meet the nation's requirements for technicians and junior executives there is every opportunity for the good graduates to further their studies elsewhere. The polytechnic's certificates and diplomas are being recognized as meeting the basic entry requirements of some institutions of higher learning both locally and abroad.

Teaching Staff and Enrolment: The teaching staff consists of university graduates, college graduates and graduates of Instructor Training Institute.

The enrolment at the polytechnics had been increasing steadily over the years and was expected to reach 2,500 by 1985.

<i>Year</i>	<i>Total Enrolment</i>
1969	
1971	261
1973	491
1976	1,047
1977	1,251
	1,475

The polytechnics are playing a very valuable role in meeting the nation's need for skilled workers at the middle level and the need for junior executives. Their graduates are being

rapidly absorbed into industries where the need for technicians is increasing.

5. Teacher Training Programmes

Trades and Commerce Teachers: Teachers to teach technical and vocational subjects and electives are trained in Teacher Training Colleges. The Technical Teachers Training College, established in Kuala Lumpur in 1962, trains trades and commerce teachers.

There are three types of courses available in the college:

- Industrial Arts Teachers Training Course;
- Trade Teachers' Training Course;
- Commercial Studies Course.

Each of the above courses is accompanied by basic subjects. These consist of : Principles of education; languages — Bahasa Malaysia and English; and Physical Education and Health Science.

Each teacher trainee also takes one elective subject, either music or art and craft, or library science.

The Industrial Arts A course, a two-year course, is meant for training general purpose teachers of Industrial Arts subjects in Form I, II and III to meet the needs of the comprehensive school system of education in Malaysia. The course subject undertaken by trained teachers are General Metal Drafting, Woodworking, Electricity and Power Mechanics.

The Trade Courses extend over 3 year period and teachers are trained to teach students at vocational schools in seven trades. Each trainee teacher will specialize in one of these trades. The seven Trade Courses are:

- Electrical installation and maintenance;
- Radio and Television;
- Machine shop practice;
- Sheet metal and welding;
- Motor mechanics;
- Building construction;
- Airconditioning and refrigeration.

Each trainee in the Trade Course is required to complete twelve weeks of Industrial training in his own field in selected workshops, factories or construction companies.

The Commercial Studies Course is a two-year course for the training of Commercial teachers for secondary schools.

The medium of instruction in all basic subjects (excluding English), as well as for the Industrial Arts and the Trade Courses is Bahasa Malaysia.

Agricultural Science Teachers: Teachers for Agricultural Science at the lower secondary level are trained at the Maktab Perguruan Temenggong Ibrahim in Johor Bahru. Teachers for the upper secondary classes are recruited from among university graduates.

The duration of training is two years where trainee teachers undergo courses in Professional Education, Languages (Bahasa Malaysia and English), Practical Teaching and Agricultural Sciences. The subjects that are taught in Agricultural Science over the two years are:

First year	Second year
Science in agriculture	Soil science
Principles and practices of crop production	Crops
Principles of livestock	Livestock management
Farm mechanization	Farm mechanization
Horticulture	Horticulture
Soil science	Farm management
Methodology	Methodology
Practical: Vegetable gardening and project work	Practical: Practical experience in the following areas are given:
	Farm mechanization
	Livestock Production
	Horticulture
	Laboratory
	Farm work

Besides the above pre-service training, in-service training for serving teachers is also conducted at the college.

Home Science Teachers: Home Science Teachers are trained at the Temenggong Ibrahim College in Johor and the Women's Teachers College in Melaka. There are two types of courses — one for the training of General Home Science teachers to teach Home Science in the lower secondary classes, and the other for the training of specialist teachers of Home Science to teach the subject at the upper secondary classes.

The general course content includes Nutrition, Cookery, Housecraft, Needlework, Laundry work, First Aid, Mothercraft and Child Care. Cookery and Needlework form the course content for the specialist course. About 100 teachers are trained each year in both courses.

Non-Formal Education Programmes Designed for Development of Productive Skills: The overriding objective of the New Economic Policy is national integration and unity. To achieve this objective, "education and training is oriented to meet the skilled manpower needs of the nation and to provide greater opportunity for education among those in the lower income groups regions in the country".

At the same time, the Third Malaysia Plan seeks to orient the education and training system in order to be able "to equip youth with the knowledge and skills necessary for their effective participation in the development of the economy".

According to the 1970 Population Survey, 70 per cent of the people in Malaysia are below the age of 30; 26 per cent of these young persons fall within the 15-30 years age group. The problem then of providing sufficient programmes and training to utilize and realize the full potential of young people is immense indeed. While the Ministry of Education with its vast network schools, colleges and universities meets the educational and training needs of those in the formal system, those outside this system are generally looked after by the Ministry of Youth, Culture and Sports, the Ministry of Labour, the Ministry of Welfare and other Government as well as private agencies.

Numerous programmes are provided to train youths for employment, good citizenship and generally to improve their quality of life. The Ministries of Youth, Culture and Sports, the Ministry of Labour, the Ministry of Welfare Services, the Ministry of National and Rural Development, Ministry of Agriculture, the Ministry of Information, are some of the government agencies that provide such training for the out-of-school population.

11. VOCATIONAL EDUCATION IN SINGAPORE

The school system provides for programmes which combine education with productive work experiences. These programmes are directed specifically at children who are not gainfully employed.

For the in-school population a Basic Course has been introduced as a parallel to the standard course at the primary level. The objective of the Basic Course, introduced in 1977, is to offer an opportunity for pupils who are unable to cope with the Standard Course to continue with a schooling and training programme more suited to their capabilities and potentials.

Pupils are transferred to the Basic Course at the minimum age of eleven years after failing three times in the Standard Course. The Standard Course is essentially a six-year programme of primary education. A pupil is allowed to be retained not more than twice in the Standard Course. The rationale is to provide a six-year primary education to pupils who can complete the course successfully, and a maximum of 9 years of primary education for those who are not academically inclined.

The Basic Course offers a modified primary school curriculum. Briefly the Basic Course curriculum includes the learning of the First Language, Basic Arithmetic, Moral Education and Civics, Craft and Handiwork, Physical and Health Education and Music. At the fourth level, when pupils are being prepared for the world of work, boys are given Workshop Practice for some training in handling simple tools and girls are given instruction in Domestic Science. Inculcation of good work attitudes is emphasized through Work Ethics and Work Safety.

Combining Education and Work for Out-of-School Population

Programmes combining education and work for the out-of-school population who are gainfully employed are many

and varied and are provided by statutory bodies, tertiary institutions, community centres and industrial concerns themselves.

Beyond the school system, joint participation between the Singapore Government and large international firms to train young Singaporeans into self-reliant craftsmen to meet the requirements of highly-skilled workers in skill-intensive industries through joint industrial training schemes, is another landmark in education and industrial training. Large international companies requiring a sizeable number of craftsmen are thus encouraged to set up training centres with the Singapore Government on cost-sharing basis. At present, there are three training centres set up jointly with Tata Precision Industries Pvt. Ltd., Rollei Singapore Pvt. Ltd. and Philips Singapore Pvt. Ltd. These training schemes are run by Management Committees drawn up of members comprising Government and the parent company.

In addition to all these government-sponsored and institutional apprenticeship training schemes, there are large factories such as shipyards and transport companies which train new members, related to the specific needs of their organizations, to maintain their existing level and scope of production and to meet expansions envisaged. Modern apprenticeship schemes have been developed by these large organizations. The Keppel Shipyard has developed an elaborate training scheme for its own staff. The training programme, comprising both the off-the-job and on-the-job components, provides training for skilled tradesmen as engineer fitters, turners, welders, burners, pipe workers and carpenters. Those who have completed primary education are eligible for this programme. Skilled craftsman training, leading to nationally recognised trade certificates as machinist-fitter, steel worker, electrician and wood-worker, is provided through the Craft Apprenticeship Scheme and caters for those who have completed 3 years of secondary education. The Technician Traineeship Scheme offers opportunities for further training as Technician Trainee for a period of up to a maximum of three years during which supervisory training is given to teach the trainees the principles of sound supervision and to widen his knowledge of modern management techniques and practices. The 2-year Graduate Training Scheme for qualified engineers, technicians and administration personnel is aimed at familiarising them with

the day-to-day practice in ship-building and ship-repairing industry.

In August 1976, a 3-year Integrated Apprenticeship Scheme was launched by the Singapore Bus Services Limited, the major bus company in Singapore, in conjunction with the Industrial Training Board. The Scheme provides one year off-the-job institutional training and a two-year on-the-job training. During institutional training, the trainees follow a basic course at National Trade Certificate (Grade 3) level to acquire the foundation for the 2-year on-the-job training. At the end of the apprenticeship the trainees are expected to attain the National Trade Certificate (Grade 2) level in Commercial Vehicle Mechanics. Secondary 2 school leavers in good health are eligible for this Scheme.

For the first year of training, trainees receive a monthly salary plus free tuition and travel on the company's buses. During the second and third years of on-the-job training, they receive an increase in monthly salary. On completion of training, apprentices continue as employees of the company and receive a monthly salary at skilled-worker rate on a two-year bond.

Industrial training for apprentices does not end with the acquisition of skills, but more importantly, it includes the acquisition of correct work attitudes, work also nurtured for wider responsibilities in supervisory grades in later years with the organization. The training programmes of factories are usually administered by their respective personnel departments which assume a training function in consultation with Heads of Departments and training staff. Close liaison with Industrial Training Board (ITB) is also maintained.

While regular institutional programmes form the main component of the training activity of the Industrial Training Board, there are numerous other opportunities for workers to upgrade their skills or prepare themselves for public certification through attendance at part-time courses conducted by its various institutes in the evenings.

In addition to these part-time evening courses, the Industrial Training Board also conducts day-release courses for various categories of workers who are sponsored by industrial establishments. Specially-tailored or ad-hoc courses are also

conducted on request to meet the changing needs of industrial concerns or to prepare non-technical personnel for new areas of technical functions in these concerns.

Under its Vocational and Technical Education Programmes, the Adult Education Board conducts various short ad-hoc courses on a part-time basis to suit the educational backgrounds of a diverse student clientele. Part-time courses are organized in the evenings and week-ends for the convenience of the public. Among the more popular of these courses are Motor-car Maintenance and Tune-up, Dress-making and Dress Design, City and Guilds Electrical Engineering Practice and Telecommunication, Electrical Drawing and Blueprint Reading, Ladies permanent Wave Hairdressing, Men's Tailoring and Drafting and Simple Household Wiring.

The Adult Education Board also offers a wide range of part-time commercial education courses during the leavers. These courses cater for working adults as well as school leavers. These courses cater for students who wish to prepare for careers in the commercial sector and for working adults who wish to upgrade their skills and knowledge to be more proficient in their work or for job advancement. These classes are conducted at centres for the convenience of students residing in various parts of Singapore. The various courses taught include Book-Keeping, Commercial English, Short-hand and Typewriting, and Accounting and Costing. Special ad-hoc courses of 2-6 months' duration are also conducted in Computer Programming, Import and Export Procedures, Sales and Markets and Chinese Typewriting.

Part-time professional courses in commercial education leading to the Examinations of the Association of Certified Accountants, the Institute of Accounting Staff, the Institute of Business Administration and the Institute of Chartered Secretaries and Administrators and the Certificate in Banking, are also conducted by the Adult Education Board specially for students who are unable to proceed to overseas colleges offering these courses.

Opportunities for working adults and school leavers to complete their secondary school education are provided for in the evening in the many centres administered by the Adult

Education Board. In this way students enhance their job prospects.

The Singapore Polytechnic offers 5-year part-time day-release courses for personnel employed in industry too. The courses are equivalent to the full-time 3-year diploma courses also offered by the Polytechnic.

The provision of educational facilities for the out-of-school population in vocational and commercial education is not confined to the statutory bodies; other private institutions and civic organizations also play an important role. There are some 43 private commercial schools and nine vocational schools which cater for a wide range of commercial and vocational education in Singapore. Civic organizations and community centres organize vocational courses for adult workers and school leavers in Basic Electronics, Monochrome Television Servicing, Colour Television Servicing, Photography Developing and Printing and Industrial Electricity.

PART — XII

A BRIEF ACCOUNT OF VOCATIONALISATION OF EDUCATION AT DIFFERENT STATES IN INDIA

1. Andhra Pradesh
2. Maharashtra
3. Karnataka
4. Kerala
5. Chandigarh
6. Punjab
7. Pondicherry
8. Tamilnadu
9. Assam
10. Tripura
11. Orissa

PART - XII

A BRIEF ACCOUNT OF VOCATIONALIZATION OF EDUCATION AT PRESENT STATE IN INDIA

1. Andhra Pradesh
2. Maharashtra
3. Karnataka
4. Kerala
5. Madhya Pradesh
6. Punjab
7. Rajasthan
8. Tamil Nadu
9. Uttar Pradesh
10. West Bengal
11. Orissa

INTRODUCTION

Vocationalisation of higher secondary education is one of the priority areas in education but it is interesting to note that the introduction of vocational education has been a very late phenomenon. In the annals of the educational history of India, vocationalisation came up for study and recommendation by several expert committees and commissions and could not be implemented until the late seventies. Thus, it was in 1978 that the States decided to introduce the vocational stream. About 11 states introduced the vocational courses relevant to the socio-economic set up of the area. Almost all the states accepted it in principle.

1. VOCATIONALISATION OF EDUCATION IN ANDHRA PRADESH

Vocational Scheme of Education was introduced at + Stage in Andhra Pradesh in 1979-80 in 23 Junior/Degree Colleges with 32 sections of 16 courses, admitting 550 students against the sanctioned strength of 640. Year by year the Vocational Education has been expanded and by 1983-84 the number of colleges rose to 107 with 151 sections offering one or the other of 21 courses with the sanctioned strength of 3310. The details are enclosed vide Annexure (1).

There are 21 courses in the faculties of Engineering, Medicine, Agriculture and Dairying, Secretarial Practice. The intake is 20 per section in all courses except Dental Hygienist, Dental Technician and Medical Lab. Assistant where the intake is 10. The first batch of Vocational students appeared for the examinations in 1981. The results are 379 out of 495 in 1981, 693 out of 1077 in 1982 and 406 out of 1267 in 1983 passed in the Examination. The details are enclosed in Annexure (II).

V. R. Reddy Committee Report

The Government of Andhra Pradesh appointed a Committee with V. R. Reddy, as Chairman on 7-3-1983 to review the existing pattern and to make recommendations for the Vocational Programme to be more effective and purposeful. The Committee made several recommendations to improve and to strengthen the Vocational Programme in the State. The details of recommendations are in Annexure (III).

Recognition of the Courses

- (i) Recognition of Pharmacy course by Pharmacy Council of India, New Delhi is pending with P.C.I. All the passouts in Pharmacy are unemployed for want of recognition;

- (ii) The Government appointed a Sub-Committee for identifying the avenues for employment, the reports of which were submitted to the Government. (The details are given in Annexure IV).

Incentives

- (i) The Vocational Course passouts are considered for admission into Degree in the appropriate branch;
- (ii) The passouts of Engineering courses are eligible for admission into respective professional courses subject to the condition of their merit in the entrance examination;
- (iii) Recently the Government issued orders for admitting the Engineering students directly into II year Polytechnic Diploma Course (III Semester).

Vocational Courses at the Upper Primary and Secondary Stage

Committee — Annexure I:

First Meeting on 4-4-84:

Conclusions of discussion :

- (i) SUPW to be retained in VI & VII;
- (ii) Vocational courses will be started in classes VIII-X;
- (iii) General education content to remain undisturbed;
- (iv) Vocational education to be introduced as an additional component in place of SUPW for VIII-X with 30% of the total working hours/week;
- (v) 50-100 schools to be selected in 7 districts for introduction of vocational education at 8th class level during 1984-85;
- (vi) Each class should have an intake of 30-40 students;
- (vii) A quick survey to be made for identifying facilities of schools and for identifying skills required;
- (viii) Vocational education shall be for all the students that are admitted in that school in 8th, 9th and 10 classes starting with 8th class from 1984-85;

- (ix) Second and third phase of implementation to be considered subsequently;
- (x) There is a need for a separate cell in SCERT;
- (xi) For the present schools will depend on I.T.I's, local industries or institutional facilities for training the students.

The vocational education will be designed to train the students during VIII, IX and X classes to attain skills at the level of artisan and craftsman.

Major Areas Selected

- (A) Economic and Commercial;
- (B) Small Business Management;
- (C) Agriculture and Allied Subjects;
- (D) Technical and Crafts.

The sub-committee recommended that 2 or 3 trades should be selected for each school and 1 trade should be relevant to the girls wherever there is co-education.

Other Recommendations of the Sub-committee

- (i) Close link be established between vocational training and ongoing business activities;
- (ii) Need to ensure vertical mobility.

Final meeting of the Committee had been fixed for 28-4-84 to give the whole scheme a viable shape for immediate implementation.

ANNEXURE I

Statement Showing Number of Colleges Started, Number of Sections, Number of Courses Sanctioned Strength and Students Admitted During the Period 1979-80 to 1983-84

Sl. No.	Year	No. of Colleges	No. of Sections	No. of Sanctioned Courses	Strength	Students Admitted
1.	1979-80	23	32	16	640	550
2.	1980-81	55	84	20	1650	1300
3.	1981-82	81	113	20	2230	1400
4.	1982-83	87	134	21	2650	2190
5.	1983-84	107	151	21	2990	

ANNEXURE II

Statement Showing the Number of Vocational Candidates Appeared and Passed During the Years 1981, 1982 and 1983 — Coursewise

Sl. No.	Name of the Course	1981		1982		1983	
		Appeared	Passed	Appeared	Passed	Appeared	Passed
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	Surveyor and Estimator.	69	60	81	61	79	38
2.	Roads and Buildings Construction Technician.	53	39	86	58	89	41
3.	Water Supply and Sanitary Engineering	39	18	56	39	43	18
4.	Electrical Domestic Appliances and Rewinding.	51	26	66	39	58	26
5.	Electrical Wiring and Contracting.	45	28	51	15	40	14
6.	Rural Engineering Technician.	53	35	105	62	104	37
7.	Automobile Engineering Technician.	17	16	45	32	35	13
8.	Radio and Television Technician.	16	14	18	15	29	8
9.	Crop. Production (Agriculture).	32	22	27	19	33	—
10.	Dairying.	15	13	36	10	41	5
11.	Poultry and Swine Production.						

ANNEXURE II (CONTD.)

1	2	3	4	5	6	7	8
12.	Commercial Garment Making.	16	1	19	1	18	4
13.	Creche and Preschool Management.	4	—	4	—	10	—
14.	Office Assistantship.	25	17	182	88	304	85
15.	Accounting and Taxation.	54	57	155	148	238	134
16.	Pharmacy.	16	12	117	113	121	54
17.	Dental Hygienist	—	—	2	2	9	2
18.	Medical Laboratory Assistant.	—	—	4	2	7	3
19.	Dental Technician.	—	—	6	6	6	2
20.	Sericulture.	—	—	7	—	43	2
21.	Fruit Preservation.	—	—	—	—	—	—
		495	379	1077	693	1267	486

Total — 1558.

Percentage of Passes: 1981 = 76.57%, 1982 = 64.35%, 1983 = 38.36%.

ANNEXURE III

Recommendations of V. R. Reddy Committee

3.1 Vocational Survey should be periodical and time-bound to make Vocational education relevant to the needs of the Society.

3.2 Vocational Education and its objectives must be made popular through Audio-Visual and other communication media.

3.3 Vocational Component in the existing Vocational Courses may be restructured to strengthen the quality.

3.4 Study material should be prepared on priority basis and Telugu may be made medium of instruction.

3.5 The Orientation programmes may be organised for the teachers to improve the quality of the scheme. The appointing authority shall be authorised to have the teaching staff by open recruitment or by deputation.

3.6 Administration procedure must be made simple and feasible to make this time bound programme successful.

3.7 Job training facilities must be provided for the students in the industries, commercial establishments both public and private sectors and in Government.

3.8 Facilities, either full time or part time, are to be provided for continuing education.

3.9 A State Council for Vocational and Technical Education be constituted to perform advisory role and a State Board of Vocational Education under this Council be there to perform academic and evaluation function.

3.10 The existing courses should be consolidated to make the Vocational Courses more purposeful, attractive and qualitative.

3.11 New Courses (Vocational Courses) must be started in 1984-85 to meet the required target of VI Five Year Plan for an intake of 5000 by introducing 135 sections with an intake of 20 each in addition to the existing courses with 2390 students.

3.12 Incentives and other financial aids (such as grant-in-aid) may be given to Private Junior/Degree/Polytechnic colleges to start the Vocational Courses.

FINANCIAL ESTIMATES FOR CONSOLIDATION AND EXPANSION OF VOCATIONAL EDUCATION

4.1 During 1982-83 an amount of Rs. 42.36 lakhs towards recurring expenditure (Teachers and Administration) and an amount of Rs. 26.14 lakhs towards non-recurring expenditure (equipment, books, buildings, etc.) was sanctioned for Vocational Courses.

4.2 This was felt inadequate by the V. R. Reddy Committee and the Committee suggested for the sanction of an additional amount of Rs. 107.10 lakhs (Rs. 55.10 lakhs + Rs. 52.00 lakhs towards recurring and non-recurring expenditure respectively) for the smooth and efficient running of existing Vocational Courses in the Junior/Degree Colleges in the State.

4.3 The Committee also suggested for the expansion of Vocational Courses during 1983-84 by introducing 135 new sections in the Junior/Degree Colleges of the State. For this purpose, the Committee recommended an amount of Rs. 124.38 lakhs towards recurring and non-recurring expenditure.

4.4 Thus, a total additional amount of Rs. 241.56 lakhs would be necessary to meet the recurring and non-recurring expenditure of the consolidation and expansion of Vocational Courses as suggested by the V. K. Reddy Committee (Rs. 117.18 lakhs for consolidation and Rs. 124.38 lakhs for expansion).

4.5 Government may sanction the above amount to the Director of Higher Education for smooth and efficient running of Vocational Courses in the State for 1983-84.

ANNEXURE IV

*Board of Intermediate Education — Vocational Courses — Andhra Pradesh.
Particulars of Different Vocational Courses Recommended by the Sub-Committee for Recognition
for the Purpose of Employment.*

S. No.	Name of the Courses	Post Recommended	Pay Scale	Department	Remarks
1	2	3	4	5	6
1.	Surveyor and Estimator.	Skilled Class-II.	Rs. 450-700	Government Departments/Corporations involved in Civil Engineering Works, Roads and Buildings Department.	
2.	Roads and Buildings	Skilled Class-II Tradesman Grade-I.	Rs. 450-700	—do—	
3.	Water Supply and Sanitary Engineer.	Skilled Class-II Tradesman Grade-I Fitter Grade-I.	Rs. 450-700	—do—	
4.	Electrical Wiring and Contracting.	Skilled Class-II.	Rs. 450-700	Roads and Buildings Department Corporation and A.P.S.E.D.	
5.	Electrical Domestic Appliances and Rewinding.	Skilled Class-II.	Rs. 450-700	—do—	

(ANNEXURE IV) Contd.

1	2	3	4	5	6
6.	Rural Engineering and Technician.	Skilled Class-II	Rs. 450-700	Irrigation Development Corporation, Agro-Industries Corporation.	
7.	Automobile Engineering Technician.	Mechanic Grade-III Mechanist Grade-I Fitter Grade-I.	Rs. 450-700	State Road Transport Corporation and other Corporation Departments.	
8.	Radio and Television Technician.	Mechanics.	Rs. 450-700	Information Department Police, Radio Communications.	
9.	Crop Production (Agriculture).	Sub-Assistants, Village Development Officers.	Existing Scales.	Agriculture Department and A.P.A.U., Panchayat Raj Department.	
10.	Dairying.	Field Assistants, Dairy Assistants, Veterinary Compounders, Dairy Laboratory Testers, Village Development Officers.	V.D.Os.	Department of Animal Husbandry and for similar posts in respective Corporation Panchayatiraj Department.	
11.	Poultry and Swine Production.	—do—	—do—	—do—	
12.	Sericulture.	Foreman in Sericulture Farms.	—dc—	Reeling Centres, Silk Worm Engineering Production (Sericulture) Units, Young Silk Worm Rearing Units.	

(ANNEXURE IV) Contd.

1	2	3	4	5	6
13.	Commercial Garment Making.	Grama Sevikas, Tailoring Instructors, Extension Officers in Women and Child Welfare Department.	—do—	District Women Welfare Centres, A.P. State Textile Corporation, Federation of Garment Manufacturing Co-operative Societies.	
14.	Creche and Preschool Management.	Grama Sevikas, Teachers in Balwadis, Extension Officers.	—do—	Women and Child Development Department.	
15.	Office Assistantship.	Junior Assistant, Typists and Stenographers, Senior Inspectors in case of (SCs, STs and BCs) and Junior Inspectors in case of others in the Co-operative Department.	V.D.Os.	Ministerial Cadres in all Departments, Corporations, Board, etc. Co-operative Society. The Department of Co-operation.	
16.	Accounting and Taxation.	Junior Assistant.	—do—	Ministerial cadres in all Departments, Corporations.	
17.	Pharmacy.	Pharmacists Grade-I.	—do—	Medical and Health Department.	
18.	Dental Hygienist.	Dental Hygienist.	—do—	Medical and Health Services.	
19.	Dental (Technician).	Dental Mechanics.	—do—	—do—	
20.	Medical Laboratory Assistant.	Laboratory Attendants.	—do—	Medical and Health.	

NOTE: Only 20 courses were considered by the Sub-committee appointed by the Government so as to be approved by the Government.

2. VOCATIONALISATION OF EDUCATION IN MAHARASHTRA

In accordance with the recommendations of Kothari Commission, the Government of Maharashtra adopted a uniform pattern of general education (10 + 2 + 3) from the year 1972 and to this general education a component of vocational education at the higher secondary level has been added from the year 1979-80. The courses have been started in the schools as well as in colleges. The object of starting these courses at the higher secondary level is to enable the students to pursue higher education at the university level if they so wish, or to find wage employment or self-employment after completion of their higher secondary education. For conducting the courses only such institutions have been selected by the Department of Technical Training with the approval of the Government and were allowed to introduce the vocational courses at the higher secondary level where the infrastructural facilities were available to run the courses. The vocational courses in which these institutes are allowed to impart instructions, are in accordance with the subjects prescribed by the Maharashtra State Board of Secondary and Higher Secondary Education. For the present there are 23 vocational courses introduced under the six faculties/groups with the enrolment as under during 1983-84 :

(1) Technical Group

(1) Electrical Maintenance	1242
(2) Mechanical Maintenance	406
(3) Scooter & Motor Cycle Servicing	492
(4) General Civil Engineering	396
(5) Electronics	1576
(6) Chemical Plant Operation	25

(2) Commerce Group	
(7) Banking	1200
(8) Insurance	246
(9) Office Management	1038
(10) Marketing and Salesmanship	1348
(11) Small Industries and Self-Employment	802
(12) Elementary Industrial Management	156
(3) Agricultural Group	
(13) Animal Science & Dairying	265
(14) Farm Mechanic	75
(15) Horticulture	209
(16) Crop Science	492
(4) Food Technology Group	
(17) Bakery & Confectionary	60
(18) Food Preservation	57
(19) Cookery	167
(5) Fishery Group	
(20) Fish Processing Technology	55
(21) Fresh Water Fish Culture	251
(6) Para-Medical Group	
(22) Multipurpose Health Workers Course	97
(23) Elementary Lab. Technology	123
TOTAL	11251

Government of Maharashtra adopted bi-focal concept. Students spend $1\frac{1}{3}$ of their time in theory and practicals of the occupational areas. The higher secondary stage level is under the purview of Higher Secondary Education Board and these Institutes are called Higher Secondary Schools or Junior Colleges. But the real university education in Maharashtra State starts after the higher secondary level. The real bifurcation is made in this bi-focal pattern of education

after + 2 stage. After the + 2 stage the vocational education can be treated as terminal in nature. The bi-focal concept takes full note of the fact that the school leaving students at the + 2 level will be in the age of + 17 and are not capable of joining any employment either wage or self immediately, as the employment age is prescribed as + 18. Hence, the field for higher education to capable students is kept open. The student passing vocational subjects at higher secondary level and having merit and means will be definitely going for higher education in the particular stream with the vocational bias, and they will be getting preference for getting admission for university education. In Maharashtra State trend shows that getting admission to the professional courses, i.e., degree in Engineering during 82-83, total 1,834 seats were available out of which 171 students from vocational courses passing XII Std. had been admitted. Hence, this percentage is 9.32. From the statistics collected for the last 3 years it has been observed that only 4.9% of the students from the vocational courses have been admitted to the professional colleges from the available seats for admission. In polytechnics also it has been observed that only 6.24% of the students have been admitted. From the above statistics it indicates that few vocational students are getting admission for the professional higher education.

The students having merit but no means or having no other source can be made fit to enter into the work force either in the form of self-employment or wage employment with the help of structured training of terminal nature either in the institutes or in industries. Various measures are taken to permit this concept. Under the Special Vocationalised Education Training Scheme the provision of providing experience has been made. The training has been imparted in the various undertakings including industries in the State. The students passed out from the vocational courses in specific field identified for the purpose. It is the experience that unless the students are shown their places of work in the society, the terminal nature courses, or specialised training programmes will not be useful. 135 students under this scheme have taken training in various organisations after passing Higher Secondary Vocational Courses for a duration

of six months, but they are not absorbed by these organizations. In order to show their place of work in the society, it is necessary to reframe the recruitment rules to accommodate these students in the private as well as Government undertakings. No effort in this direction has been made so far in the Maharashtra State.

The Director of Training is the overall controlling officer of all types of Technical and Vocational Institutes in the State (excluding Engineering Colleges and Polytechnics) and he is assisted by the Dy. Director of Technical Education (Voc.) with some supporting staff. At the regional levels the Dy. Directors of Tech. Education of the regions are carrying out the work of supervision and administration with the help of Dist. Vocational Education Officers in the region. At present there are 30 Districts in the State of Maharashtra and these districts are distributed among the 9 Dist. Vocational Education Officers. Each Dist. Vocational Education Officer is looking after 3 to 4 Districts for supervising the work of vocational education. The Dist. Vocational Education Officers are assisted by the supporting staff to carry out their work such as:

- (a) Work of survey of the District to identify and recommend the courses;
- (b) To assist the Institutes in his District for getting proper staff and getting training;
- (c) Recommending the institutes for running proper vocational courses;
- (d) Release the grants to the Institutes.

At the Head Office level one post of Dy. Director of Tech. Education (Voc.) is created and he is assisting the State Director of Training in the administrative and training matters.

During the year 1984-85 this Department has proposed 11 posts of Dist. Vocational Education Officers so that the present load on the Dist. Vocational Education Officers will be minimised. Looking to the response to the scheme from the students it has become essential to increase the facilities of the vocational education. As during 1984-85, 11 more posts of

the Dist. Vocational Education Officers will be created raising the total number to 20, thereby the load on the present Dist. Vocational Education Officers will be reduced and one Dist. Vocational Education Officer will look after one Dist. or maximum two. In order to assess the manpower requirement and to give the students career education one post of Statistical Assistant and one post of Counsellor is attached to the office of the Dist. Vocational Education Officer.

The Scheme of Examination for Std. XII is as follows:

- | | |
|---|-----------|
| (1) One language | 100 marks |
| (2) Any three optional subjects from
general education | 300 marks |
| (3) Any one Vocational subject from
among the Vocational Courses
prepared by the Board (in lieu
of one language and one optional
subject) | 200 marks |

According to the above scheme the first H.S.C. Examination in Vocational Courses was conducted in April, 1980 by the Board of Secondary and Higher Secondary Education, Pune. The Examination of XI Std. is conducted as internal examination by the concerned Institutes. The eligibility of vocational students for admission to the different universities in appropriate faculties has been accepted.

During 1982-83 there were a total of 218 Institutes of which 191 were in urban areas (Population more than 30,000) and 27 in rural areas. During 1983-84, there were 250 Institutes out of which 211 were in urban areas and 39 in rural areas. In the six main Faculties/Groups there were 23 courses upto 1983-84 and total number of batches (each of 25) are 467 resulting in intake capacity of 11,675. During the year 1982-83, 6847 students have appeared for the examination out of which 4472 students have passed.

It is observed that for teaching purposes, teachers with suitable qualifications and experience are not available. It is necessary to give them in-service training during vocation so that they will be in a position to impart instructions effec-

tively. For successful implementation of the vocational education at + 2 level the participation of the various organisations where the training facilities are available is obtained. The teachers working under the vocational scheme are trying to maintain contacts with the various organisations but it is observed that full and wholehearted co-operation is not extended by the organisations. Further, it is experienced that many of the organisations are preferring the vocational students for apprenticeship as compared to the students who come from the general stream.

For running the courses there is a lot of financial strains. Government of Maharashtra has given the permission to open the vocational courses on no-grant-in aid basis to the various Institutes. They are finding it difficult to run the courses for want of finances. Hence, if courses are to be run effectively the grant to the extent of at least recurring expenditure, i.e., the salary of the teachers, and raw materials required for conducting the practicals etc. be borne by the Government.

At the national level, Government of India is considering very actively to make the Apprentices Act, 1961 applicable to those students passing vocational courses at + 2 level and accordingly there will be a fourth category of apprentices, i.e., technical (Vocational) apprentices. They will be sent for on the job vigorous practical training to the industries or any such organisation where facilities exist and they should be paid stipend for the minimum period of one year as per the rate fixed by the Government of India. The stipend is to be paid by the organization where the students will be undergoing training. If this materialises, the bi-focal pattern adopted by the Government of Maharashtra at + 2 level and a terminal pattern after + 2 stage will prove most successful for self-entrepreneurs as well as for gainful employment in the appropriate field.

TABLE 1
The Number of Courses Introduced, Enrolment of Students, Number of Students Appeared and Passed in Final Examination.

		Courses Introduced			Enrolment During 1982-83			Enrolment During 1983-84			No. of Students Appeared and Passed in Final Examination		No. of Institutes Yearwise and Coursewise Introducing Vocational Courses			
Sr. No.	Name of Vocational Courses	Upto 1982-83			Male			Female			Appeared			(a) Urban		
		(a)	(b)	(c)	(a)	(b)	(c)	(a)	(b)	(c)	(a)	(b)	(c)	(a)	(b)	(c)
<hr/>																
(1) Technical Group:																
1.	Electrical Maintenance.	47	8	55	1157	19	1176	1218	24	1242	778	394	1982-83			
													191	27	218	
2.	Mechanical Maintenance.	13	—	13	413	1	414	406	—	406	272	136				
3.	Scooter and Motor Cycle Servicing.	16	7	23	393	5	398	471	21	492	232	136	1983-84			
													211	39	250	

TABLE 1 (Contd.)

	(a)	(b)	(c)	(a)	(b)	(c)	(a)	(b)	(c)	(a)	(b)	(c)
12. Elementary Industrial Management.	4	2	6	96	12	108	131	25	156	91	58	
(3) <i>Agricultural Group:</i>												
13. Animal Science and Dairying.	20	—	20	456	65	521	467	98	65	263	114	
14. Farm Mechanic.	4	—	4	78	—	78	72	1	73	20	3	
15. Horticulture.	10	—	10	225	24	249	188	21	209	125	78	
16. Crop Science.	20	1	21	568	4	572	484	8	492	298	158	
(4) <i>Food Technology Group:</i>												
17. Cookery.	5	1	6	21	97	118	58	109	167	113	89	
18. Bakery and Confectionary.	3	3	6	17	51	68	13	47	60	49	33	

TABLE 1 (Contd.)

	(a)	(b)	(c)	(a)	(b)	(c)	(a)	(b)	(c)	(a)	(b)	(c)
19. Food Preservation.	2	1	3	4	47	51	2	55	57	39	36	
(5) Fishery Group:												
20. Fish Processing Technology.	2	1	3	59	36	95	45	10	55	57	25	
21. Fresh Water Fish Culture.	7	4	11	81	47	128	157	94	251	127	80	
(6) Para-medical Group:												
22. Multi-purpose Health Workers Course.	4	2	6	49	28	77	92	5	97	64	44	
23. Elementary Laboratory Technology.	5	—	5	69	58	127	107	16	123	55	41	
	384	83	467	8330	1543	9873	9477	1774	11251	6847	4472	

3. VOCATIONALISATION OF EDUCATION IN KARNATAKA

The need for change in the education system of the country was engaging the attention of Government of India, State Governments and the Education Experts for the last few years. It was felt that education has become highly academic and unpurposeful for a majority of students especially to those from rural background. Even though a majority of students want ultimately to enter the world of work, there is no conscious effort to provide suitable training for them to enter the world of work except in the case of a minor section who secure seats in Colleges of Engineering, Medicine, Agriculture and allied courses at college level and polytechnics and Industrial Training Institutions, etc., at the Higher Secondary level. The number of students in the general Degree Courses keeps on swelling and the products therefrom are pronounced more and more unemployable as the requirement of developing economy has not been considered. There is a need for trained personnel at different levels in almost every area of vocation. Trained personnel in some of the vocations are not available when thousands of general graduates are found available but unemployable. This situation has led to a feeling of devaluation of the degrees in the eyes of the society and the students themselves. Some of the students have been demanding jobs instead of degree certificates on the occasion of many Convocations. It implies that there is a great felt need for job-oriented courses or vocational education.

For many of the students, S.S.L.C. becomes the terminal stage due to the economic backwardness of families in the rural areas. Almost every Taluk Headquarters and Town has Junior Colleges with facilities for Higher Secondary (Pre-University) Education. Sometimes, such parents from rural

areas can afford to send their children for Higher Secondary Education also. After that, it becomes practically a terminal stage for a good number of students as they cannot go for general higher studies or higher technical courses, facilities for which are normally available in big towns and cities. Many students may desire to enter the field of work after S.S.L.C. For such students, especially Vocationalised Education is very useful as they can hope to get jobs in the middle level managements or can go for self-employment.

In the year 1964, the Indian Education Commission was constituted under the Chairmanship of Dr. D. S. Kothari. The Commission studied all the earlier recommendations and suggested a uniform $10 + 2 + 3$ pattern of education. Consequently in 1968 the Ministry of Education, Government of India accepted the recommendations through a policy resolution of Parliament to this effect. One of the major recommendations related to the introduction of Vocational Stream at the Higher Secondary stage. In the year 1976, the National Council of Education Research and Training published its National Document 'Higher Secondary Education and its Vocationalisation' in which it designed the framework of vocational strain to prepare the students for gainful occupations through a number of vocational courses. The National Council of Educational Research and Training and the successive Education Commissions and Committees, after careful analysis of the prevailing conditions recommended the introduction of the Novel Innovative Measure, namely "Vocationalisation of Education", whereby they recommended establishment of close links between education and employment. The recommendation as accepted by the Government of India and communicated to the State Governments demanded urgent measures to introduce Vocational Courses at the $+ 2$ stage of the $10 + 2 + 3$ pattern of education in as many areas as possible including those of Agriculture, Industry, Trade, Commerce, Medicine and Public Health, etc.

1. Vocationalisation of Education in Karnataka

Government of Karnataka accepted the scheme of Vocationalisation of Higher Secondary Education as commu-

nicated by the Government of India. The State Government sanctioned the implementation of the scheme in their Order No. ED 64 TPU 76 dated 12th July 1977. This order granted permission for:-

- (i) the implementation of the scheme of Vocational Education in accordance with the Government of India pattern under the purview of a state level committee of the Government; appointing a State Level Officer designated as Director of Vocational Education who will be responsible for organising and supervising the scheme including the preparation of syllabus and arranging for instructional staff, material and training facilities and monitoring the scheme.
- (ii) the Constitution of a State Level Committee and Syllabus Committees as may be required and the District Level Committees consisting of representatives of general education, Technical Education, Labour, Health, Agriculture, Veterinary and Animal Husbandry, Services Industries (specially Small Scale Industries), Planning, Development, Government and Private Industries, etc., the introduction of the scheme in the districts of Bangalore, South Kanara and Dharwar as a Pilot scheme.

II. Formation of the Department of Vocational Education and State Council of Vocational Education

The State Government accorded sanction to the creation of a Directorate of Vocational Education under the Administrative control of the Education and Youth Services Department with Headquarters at Bangalore, as per their Order No. ED 64 TPU 76, Bangalore, dated 12-7-1977. In the initial stage, the Department consisted of the Director of Vocational Education and the Vocational Educational Officer at the State level and Five Deputy Directors of Vocational Education at Division level.

Now the Directorate consists of the Director, one Vocational Education Officer, one Deputy Director of Vocational Education (Headquarters and Administration), one Accounts Officer (drawn from the State Accounts Department) and the subordinate staff. Four Deputy Directors of Vocational Edu-

cation are located at different divisional offices at Mangalore, Shimoga, Dharwar and Raichur with the subordinate staff.

The Director of Vocational Education works under the control of the Commissioner for Public Instruction, Karnataka, Bangalore. There is a proposal for the reorganisation of the Department with the additional staff to meet the growing needs of the Department in view of the rapid progress achieved in Vocationalisation of Education in the State.

The Government also constituted a Committee called "State Council of Vocational Education" vide Order No. ED 30 TPU 78 dated 15-5-1978, nominating the Director of Vocational Education as Ex-Officio Chairman and the Vocational Education Officer as Ex-Officio Secretary. This Committee was reconstituted in the year 1980.

The functions of the State Council are as follows:-

- (i) to evolve norms for the conduct of examinations for Vocational Education;
- (ii) to frame and approve regulations, syllabi etc., for the examinations;
- (iii) to award Diplomas to students who complete the examination and the training prescribed;
- (iv) to review the working of the Directorate of Vocational Education and to place the annual report of the working of the Directorate before the State Advisory Board for Vocational Education.

III. Surveys

The scheme of Vocationalisation is expected to be implemented at the District Level. The Government of India advised conducting of a detailed Survey of the Districts to assess the possibilities of employment opportunities and selection of Vocational Courses to be located in suitable institutions. It was also intended to estimate the employment potential likely to develop in the near future in the districts and to suggest new job-oriented courses for introduction in selected institutions who achieve the best possible results in an economical way. For this purpose, the Government of Karnataka sanctioned a scheme for the survey of the districts as per their Order No. ED 156 TPU 77 dated 26-9-1977. Accordingly, a survey of 19 districts was conducted and the survey report

was published and made use of to consider the sanction of Vocational courses in the respective areas.

IV. Sanction of Courses and Institutions — Yearwise

The Government of India suggested 112 Vocational subjects for introduction. Out of these, the Government of Karnataka adopted 37 courses. Two courses were withdrawn subsequently. The list of the courses is enclosed.

In the first year of introduction, i.e., 1977-78, 51 Vocational courses were introduced in 13 institutions of 3 representative Districts with an intake capacity of 1,275 students. During 1978-79 the Vocationalisation was extended to another 6 districts by introducing 61 courses in 32 institutions with an additional intake capacity of 1,555 students. Forty courses were introduced in 32 institutions in the remaining 10 districts during the year 1979-80. The total number of courses offered during the year 1983-84 are 199 in 116 institutions with an intake capacity of 4975 students.

V. Admission of Students

- (a) Admission to all the Vocational Courses in General is open to all students who have passed:
 - (i) the S.S.L.C. examination conducted by the Karnataka State Secondary Education Board; or
 - (ii) the Indian Certificate of Secondary Education Examination conducted by the Council for the Indian School Certificate Examination; or
 - (iii) any other examination recognised as equivalent to the Karnataka S.S.L.C. Examination.
- (b) Admission is made on the basis of merit in the qualifying examination and an aptitude test prescribed by Government.

VI. Selection of Students

- (1) No courses are permitted to have more than 30 students nor fewer than 20 unless otherwise specially permitted by the Director;
- (2) There is reservation of S.C./S.T. and other weaker sections of the society in each course as per Government Notification in this behalf;

- (3) There is an aptitude test for a method of evaluation of the suitability of individual student, for each course adopted for selection in addition to the marks in the qualifying examination;
- (4) For some of the courses, psychology test for physical fitness or age or all of them is considered.

VII. Fee Concession and other Facilities to Students

Basically, this is a course in the Pre-University Education and the rules and regulations relating to the grant of fee concessions and scholarships applicable to the students of Pre-University Education are applicable to the students of Vocational stream.

VIII. Regulations, Syllabi and Conduct of Examination

The Syllabi of various Vocational Courses have been framed in close collaboration with the National Council of Educational Research and Training, New Delhi, so as to suit the requirements of vocation in various fields. Review of the syllabi is also being taken up whenever it is necessary, in consultation with the N.C.E.R.T., New Delhi and Experts in the concerned fields.

There shall be two Semesters in each academic year. The First Semester shall extend from the date of reopening of the institution after the summer vacation, from 1st of July to 31st of October and the Second Semester from 1st December to 31st of March of the following year. Each Semester shall consist of 16 weeks of class work. There will be continuous internal assessment in subjects of Part-II of the course. At the end of the First and Third Semesters, there shall be an End Examination in subjects of Part-II only conducted by the Teaching Staff of the institutions concerned.

The course of study shall consist of two years, Part-I and Part-II. The scheme of teaching, training and examination in subjects listed under Part-I of the course shall be common to both academic and Vocational streams. The examination in subjects of Part-I will be held once at the end of the year. The teaching, training and examination of subjects under Part-II of the course, shall be arranged under a semester scheme, consisting of four semesters of 16 weeks' duration (four months) each. The scheme shall also include a period

of intensive practical training in the vocational course during the time stipulated for each course. Students studying in any of the Diplomas offered in the institution under the academic control of the Department of Vocational Education will not be permitted to undergo simultaneously another full-time course at a different institution. The course of study extends over a period of two years, co-terminous with the Pre-University course. Students seeking admission to job-oriented Vocational Pre-University Diploma course or studying can claim exemptions in certain Part-I subjects if they fulfil the academic qualification prescribed.

Every student should have a minimum of 75% attendance in each academic subject under Part-I to qualify himself to appear for the subjects under Part-I. Every student should have an average minimum attendance of 80% in the academic subjects under Part-II for being eligible to appear for examination of the courses of both Semester I and II put together. Condonation of attendance requirement stated above to an extent of 15% will be considered in genuine cases and for valid reasons by the Heads of the Institutions. Those candidates who fail to put in the minimum acceptable attendance are required to repeat the course afresh in all respects.

The students studying in the vocational institutions under the control of the Director of Vocational Education should conduct themselves well and maintain discipline in the institution.

On the recommendation of the Heads of the Institution, disciplinary action such as imposing fine, or subjecting a student to enquiry and dismissal will be ordered for misbehaviour or for indiscipline.

Seeking exemptions in subjects where a student has already established proficiency availing exemption are liable to be declared under class in respective parts, provided one passes in all the required subjects by securing the minimum marks prescribed for a pass in each subject.

There is no Internal Assessment for subjects under Part-I. The total marks for Internal Assessment for each of Theory, Practical and Drawing subjects under Part-II shall be 50. The evaluation of Internal assessment in respect of theory subjects shall be made up of tests (announced and unannounced) and

assignments quizzes. The internal assessment in respect of Practical and Drawing subjects shall be based on the maintenance of records, journals, the actual conduct of experiment and classification of result or drawings conducted in the class and also tests. Students are required to be regular to tests, assignments and practical work. The Practical experience or field work training or in-plant training or intensive practical training or visit to works etc., shall be valued on the basis of Diary Record prepared by the candidates as an internal assessment only for a maximum of 50 marks. The Education Tour wherever prescribed shall be valued on the diary maintained by the students and reports submitted and valued for a maximum of 50 marks. The marks scored by the student in internal assessment shall be added to the marks of examination at the end of examination for the subject while declaring results. The marks once awarded for internal assessment shall be final unless the student is permitted to repeat the course afresh.

Public Examination shall be conducted at the end of each year for II and IV Semesters in all subjects of Part-I and Part-II according to prescribed syllabus and scheme of examination. There will be two examinations each year, the Annual and the Supplementary; the annual examination will be conducted for all the Diploma Courses and the Supplementary to only such of the courses notified. The date and timings of these examinations shall be as per time-table notified for the purpose. The detailed time-tables for all examinations will be announced well in time as may be determined by the Chairman, State Council of Vocational Education. The candidates have to take the examination from the institution where they are studying or studied last which are generally fixed as Centres of examination or at any other Centre at which they are notified to take the examination. The admission tickets will be issued to the candidates by the head of the institution where they have registered. Malpractices in the examination will be severely dealt with and candidates found guilty will be cleared by the State Council of Vocational Education for appearing at the examination and penalty will be imposed as per rules laid down.

In the Part-I of the course, candidates who secure not less than 30% in the subject and 35% in the aggregate shall be

declared to have passed in Part-I. Candidates who secure not less than 40% in the Theory papers and 50% in each of the practical prescribed for the examination counting both Internal Assessment and Examination at the end of Semester put together for all the subjects, shall be declared to have passed Part-II. Candidates who obtain 60% and above of the maximum marks for each Part shall be declared to have passed that Part in First Class. Candidates who obtain 50% or more marks but less than 60% of the maximum for each part shall be placed in Second Class for that part. All other candidates successful in all the subjects of the Semester shall be placed in the Pass Class in the respective parts. Promotion from the First Semester to the Second Semester and from the Third Semester to the Fourth Semester is automatic.

Marks Card will be arranged to be issued to every candidate who appears for the Public Examination through the Head of the Institution through which he appeared, soon after the results are published. Candidate can obtain duplicate marks card by paying the prescribed fees and after establishing the fact of the loss to the satisfaction of the Vocational Education Officer (Exam.). A consolidated marks card will be arranged to be issued to a candidate if all the previous original marks cards issued are surrendered and the prescribed fees paid. The applications must be made through the institution.

The State Council for Vocational Education issues Diplomas to the successful candidates.

IX. Vertical Mobility

As per the details of the scheme of Vocationalisation of Education, higher secondary education is treated as a terminal stage. In this connection, many education experts have expressed opinion that this should not become a dead end of the educational career of the students. Accordingly, the Government and this department approached the University authorities to provide facilities for Vertical Mobility by giving admissions to these students to B.A., or B.Com., as the case may be, depending upon the subjects studied by them in the Pre-University Education level. All the Universities have already provided these facilities to the students for the present.

X. Placement

This is a very important subject in the successful implementation of the scheme of Vocational Education. The Vocational Courses are found useful for the jobs of middle level managements in Government Departments, Industrial undertakings and Business Firms. Action has been taken by this Department for placement of the students passing the Pre-University Examination with Vocational Subjects. In the year 1979, the Government constituted a High Level Committee consisting of several Heads of Departments to examine the matter of placement. Accordingly, the Heads of Departments expressed the opinion that the courses have been found useful to certain categories of posts in their respective departments, and they agreed to propose amendments to the Cadre and Recruitment Rules of their Departments to accommodate the students coming out of the examination with Vocational courses. Some of the departments have already made such provisions in the rules and other Departments have also been advised to follow suit. For example, the Karnataka Electricity Board have offered the posts of Overseers, Assistant Store-keepers, Junior Assistants, etc., in their department. Similarly, the Department of Co-operation have recognised the course of "Co-operation" for appointment of these students as Secretaries in the Primary Agricultural Credit Co-operative Societies. Certain Industrial Establishments have also appointed these students in their establishments keeping in view the qualification. Certain courses have been recognised by the Banking Commission also for appointment of clerical staff in the Nationalised Banks.

XI. Finances

During the current year, an amount of Rs. 55.00 lakhs has been allotted by the State Government to meet the expenditure in connection with the Vocational Education in the State. This is a Plan Expenditure. The funds released under the Head "277-Education D-5-IV Transferred Scheme of Vocationalisation of Higher Secondary Education", are for (a) Grant-in-aid to non-Government institutions both recurring and Non-recurring, (b) Expenditure on Vocational courses in Government institutions, and (c) Expenditure on examination.

In the initial stages of the scheme itself, these appointments are made by a Committee at the institution level wherein the Deputy Director of Vocational Education also participates as a nominee of the Director of Vocational Education.

Rules of recruitment made by the Government are applicable to such full-time appointments. In addition to the teaching staff, the institutions are permitted to appoint one full-time Clerk-cum-Typist if the Institution is running two courses or more. In case there are four courses in an institution, the appointment of a Helper is also permitted.

XII. Strategy for Expansion of the Scheme

This is actually a scheme for change of education system at the Pre-University level. This aims at the diversification of the students from the main stream of General Education to the Vocational stream. As per the scheme approved by the Government of India, at least 50 per cent of the students are expected to be diverted to the vocational stream during the Sixth Five Year Plan. As already noted in the earlier paras, this department started the scheme in the year 1977-78 with only 13 institutions and now it has been extended to 116 institutions. There is demand from several institutions for starting the vocational courses. Due to financial stringency only limited institutions are being permitted to start the course each year. As already noted, if more financial assistance becomes available, all these institutions can be permitted to start the vocational courses. However, the Department has planned to extend the scheme to 45 more institutions during the academic year 1984-85. The department proposed to extend the scheme to all the Junior Colleges in the State in the phased manner subject to availability of finances.

4. VOCATIONALISATION OF EDUCATION IN KERALA

Introduction of Vocational Courses at the two year stage after S.S.L.C. is a part of National Educational Policy. Education Ministers Conference and Planning Commission have accorded a very high priority to this programme. The objective is to divert at least 50% of the students completing S.S.L.C. to one or other Vocational Courses.

The courses are aimed at development of competencies in terms of theoretical knowledge and practical skills related to specific vocations. The theoretical knowledge is imparted in schools while practical skills are given in Farms, Production centres, Polytechnics, Research institutions etc., both under Government (Central and State) and private sectors. The object of the course being to prepare the students with adequate skills for getting directly employed in suitable vocations preferably through self-employment, the programme takes care to impart a certain level of general education and also theoretical knowledge for subjects which have relevance to particular vocational areas. The general educational components of the vocational programme are strong enough to enable the academic mobility.

The two year Vocational Higher Secondary Courses were introduced in 19 schools in the State during 1983-84 and 52 schools during 1984-85. The vocational areas selected for the introduction of the courses are: (1) Agriculture, (2) Animal Husbandry, (3) Dairying, (4) Engineering and Technology, (5) Fisheries and (6) Para-medical. Admission to each course is restricted to 25 pupils and two courses are introduced in each school.

Course Contents and Curriculum

The course is really a multipurpose course. The syllabus in the various subjects have been so designed as to enable the students who successfully complete the course (1) to take up

a vocation or (2) to pursue an academic career (B.A. or B.Sc. course) in Universities or (3) to appear for competitive tests for selection to a professional course (Engineering, Medicine, Veterinary Science, Agriculture etc.)

The training given in the vocational subjects will enable the candidates who have successfully completed the course to pursue a vocational career in the respective areas of their specialisation. It is with this end in view that the syllabi in the various subjects have been drawn up by experts in the various disciplines.

The remaining subjects are common to this course and the pre-degree course of the Universities in Kerala. The syllabi of the various subjects have been given an orientation towards the vocational subjects. A comparison of the syllabus and the time allocation for various subjects in this course and the pre-degree course will show that a higher standard has been aimed at in this course. 50 to 60% of the time is devoted for vocational subjects. The extra time required for instruction is managed by increasing the number of working days in a year and the working hours in a day. The course runs for 40 weeks each year with 32 hours of instruction per week. The second language has been completely omitted in the vocational course. But in view of the fact that the students who complete this course successfully would have achieved a higher degree of proficiency in other subjects, it would not be difficult for them to learn a second language in the degree course of the University if at all a student joins a degree course after this vocational course.

Selection of Vocational Courses

The areas of Vocational subjects have been selected based on manpower survey. The chosen areas are Agriculture, Animal Husbandry, Fisheries, Paramedical and Engineering and Technology. Though unemployment exists among educated youth, it is a sad fact that there is dearth of hands in the State in certain specified areas. The Department of Agriculture and Animal Husbandry of the State are running without adequate qualified personnel. It is hoped that the products of the Vocational Higher Secondary Courses can very well be employed as middle level officers. The State has not been able to make much headway in the fishing industry

though it has been blessed with a lengthy coast-line. The inland fishing industry can also be developed with the vast backwaters and lakes. The vocational course in Fisheries has been introduced with a view to harness the maximum potential existing in the State. The trained personnel in Para-medical areas are in great shortage in the State. Para-medical courses in Audiometry, E.E.G., E.C.G. Technician courses etc., are much needed to cope up with the merging technology. The Engineering and Technology Courses are introduced in trades where no courses are existing at the degree diploma or I.T.I. level and there is scope for self-employment. Altogether 25 courses in the above areas have been introduced so far. It is also planned to introduce vocational courses in areas like Banking, Commerce, Insurance, Forestry, Woodcraft etc., in due course.

Selection of Institutions

As a State policy the vocational courses are introduced only in Secondary Schools. The Engineering and Technology Courses are introduced in **Junior Technical Schools** as the courses can be introduced there without much extra investment due to the existing infrastructure.

The prime considerations in the selection of institution adopted by the State are: (1) Backwardness (Rural based), (2) Minimum investment in additional buildings, (3) Availability of Training establishments like Agricultural Farms, Veterinary Hospitals, Production Units, Fishing Industries etc., in the locality, (4) Availability of qualified teachers to handle classes on part-time basis.

Implementation Strategy

While introducing the Vocational Higher Secondary Education in the State, Government decided to minimise the expenditure on staff, buildings, avoid duplication of infra-structural facilities, make use of the existing facilities and utilize the spare capacity of the various industrial and other establishments. Care has been taken to keep up maximum flexibility in the vocational courses so that with minimum wastage and inconvenience the courses can be changed as the situation demands.

There are two types of secondary schools existing in the State: Junior Technical Schools and High Schools. The Junior

Technical Schools are having certain infrastructure and the vocational courses in Engineering and Technology can be introduced in these schools with minimum investment. So the Government decided to introduce the vocational courses in Engineering and Technology in the Junior Technical Schools alone.

Vocational courses in Agriculture, Animal Husbandry and Fisheries are introduced in the High Schools. There again care has been taken to see that either an agricultural farm, a Veterinary Hospital or a Fisheries establishment is existing within the vicinity of the school selected. A Para-medical course in Audiometric and E.C.G. Technician is introduced in a school which is very close to a medical college.

The various departments, viz., Agriculture, Animal Husbandry, Fisheries, Technical and General Education, Medical Education, Industries etc., are very actively involved in this programme. It is the State Government decision that the vocational part of the course should be guided and nurtured by the departments and the departments have to adopt the vocational part of the course for its successful implementation.

Staff Structure

The policy of the Government is to administer the vocational higher secondary courses with a minimum full-time staff. Unlike in Arts and Science Colleges imparting Pre-degree education, the administrative staff of the course at the school level is carried out without any extra ministerial staff. The head of the school is in full charge of the programme and he is paid a special allowance of Rs. 150/- a month.

The general education part of the programme which is very much the same as that of the Pre-degree is handled by qualified teachers (minimum M.A./M.Sc., Second Class — as prescribed for the University teachers) on part-time basis. A panel of teachers is prepared by the head of the institution after obtaining the willingness of the qualified teachers working in the nearby colleges and schools. The services of retired professors and in exceptional cases, services of unemployed qualified persons are also utilised for handling classes. The staff engaged on part-time basis are paid suitable remunera-

tion on hourly basis (Ranging from Rs. 25 to 30). The system works out very well in the State, and the classes are conducted without any interruption.

Laboratory Practicals

The schools in the State are having fairly well equipped laboratories in Physics, Chemistry and Biology. It is further strengthened by adding essential equipments to attain a level comparable with the laboratories for Pre-degree courses. These laboratories are managed by the qualified school staff and no extra staff is provided.

Vocational Subjects

50 to 60% of the instructional time is devoted for the Vocational subjects and it may come to 560 Hours in a year. As the scheme envisages more on-the-job training than that of classroom learning, only 20% of the instructional time is devoted for classroom learning in the vocational subject and the rest of the time is devoted for on-the-job training.

In the case of Engineering and Technology vocational courses which are exclusively introduced in Junior Technical Schools, practical training is arranged in the institution itself. Minimum facilities are provided in the schools. On-the-job training is also imparted taking the students to the nearby industrial establishments. Experts from the practical field are also engaged on part-time basis to impart practical skills to the students. The heads of the institutions are fully authorised to invite persons of high skills and experience to impart training to the students in specified areas. The State Governments have taken a very liberal attitude in this respect giving top priority to Vocational Education and given blanket orders to the various establishments, production centres etc., to render the services of the experts in the various institutions on the request of the Heads of institutions. The scheme works out very well in the Junior Technical Schools in the State, though of course with some teething troubles here and there. Minimum number of staff to manage the workshops established in the schools are also employed.

The vocational courses in Agriculture, Animal Husbandry and Fisheries which are introduced in the schools are func-

tioning in a slightly different way. The vocational part of the course is vested fully under the charge of a full time senior officer drafted from the concerned State Department. The head of the institution is in overall command of the situation and he is responsible for arranging the instructional facilities on the general subjects.

The technical officer who is stationed in the school will liaison with the various departments, Farms, Training establishments etc., in the locality and arrange on-the-job training to the students. The services of the experts in the farms and other institutions are also utilised for imparting training. The State Government have directed all the departments to fully co-operate with the programme and arrange facilities in the Farms for the effective training to the students. The technical officer will also function as vocational guidance officer keeping in touch with various establishments for finding placements for the passouts. He is also responsible for arranging guest lectures on entrepreneurship and management which is included as one of the subjects of study.

A paramedical course on "Audiometry and E.C.G." is introduced this year in one of the schools which is located near to a Medical College. The Headmaster is in overall charge of the scheme and responsible for providing instructional facilities in the general subjects. The vocational part of the course is fully under the charge of the authorities of the Medical College. All the theoretical instructions and practicals in the vocational subjects are conducted in the Medical College itself. A professor has been put in complete charge of the scheme. The course is well conducted and there is high demand from the people to start such courses in schools close to other medical colleges. The State Government is seriously thinking of starting courses of similar nature without duplication, in other areas of the State.

Advisory Committee on Vocational Education

A high level committee under the Chairmanship of the Minister for Education has been constituted for advising on the various aspects of the Vocational Higher Secondary Education. The Vice Chancellors of the Universities in the

State, various heads of the departments and some educational experts are members of the Committee. The situation is reviewed periodically and improvements are made on the advice of the committee.

Board of Vocational Higher Secondary Education

Apart from the Advisory Committee, a Board of Vocational Higher Secondary Education under the Chairmanship of Dr. A. K. N. Nambiar, Commissioner for Entrance Examinations, has been constituted. The functions of the committee are: the overall supervision of the implementation of the programme, preparation of curriculum and teaching materials, conduct of the Examination and Certification, placement of passouts etc. Various heads of departments, Deans of Science of various Universities, Commissioner for Educational Development and Research are the members of the Board. The board meets often and reviews the situation. The Special Officer of Vocational Higher Secondary Education is the member secretary of the Board.

Administrative Set Up at the State Level

The Vocational Higher Secondary Scheme is introduced in the State only from 1983-84 onwards. Initially Government have created a post of Special Officer with the a skeletal supporting staff for the administration of the scheme. The functions and responsibilities of the Special Officer are greatly increased due to the introduction of the scheme in more and more schools. The situation warrants the creation of a separate department as proposed in the National Seminars conducted under the auspices of the NCERT. The proposal for the creation of "Department of Vocational Education" in the State is on the anvil and it is expected that the Government will take a favourable decision without any delay.

Conclusion

On the whole, the scheme has been accepted by the people of the State wholeheartedly. But, of course, doubts remain in the minds of the people of the future of the students who pass out of the scheme. The declared policy of the Hon'ble

Prime Minister to delink degree from employment has really kindled a ray of hope in the minds of the people. The recruitment policy is also to be given a radical change so that with the adoption of Vocational Education the youth will come out of the educational institutions fully equipped to be put on the jobs contrary to the present state of affairs.

5. VOCATIONALISATION OF EDUCATION IN CHANDIGARH

The Union Territory of Chandigarh though perhaps one of the smallest administrative units in the Indian Union has been a trend setter in many fields. Even on the educational map of India, Chandigarh figures as the most educationally advanced area with a literacy rate of 64.48%. Thus, it took the challenge and introduced the new 'work-centred' system of education in the year 1977 and thus the old higher secondary system was done away with. The new system was introduced up to the secondary level and the plus two stage was postponed for the time being probably because of (a) the temporary status of Chandigarh, (b) indecision of neighbouring States of Punjab and Haryana in respect of the new system, (c) paucity of funds, and (d) non-acceptance of plus two stage courses as equivalent to the university courses by the Punjab University.

But in keeping with its tradition of being a pace-setter, it implemented the plus two stage of new educational system in the year 1981 but only the academic stream of plus two stage could be introduced though the system involves two streams, namely, the academic stream and the vocational stream. The second stream was postponed for a future date due to some administrative exigencies. But now a serious thought has been given to this subject and the administrators are seriously planning to implement the vocational stream as well. It is now felt that this stream forms the core of this new educational programme.

Prior to the implementation of the new system, it was felt that some sort of survey should be conducted so that the programmes can be well perceived and structured properly. Each and every concept should be clear since the time of inception. The conference of secondary boards in 1978 also suggested a comprehensive survey of the area. The need

of the survey is still more persistently felt in the absence of Manpower Planning and Employment Generation Council for Chandigarh. Thus, in view of all these factors, Director, State Institute of Education-cum-Director, Public Instruction, undertook to conduct a comprehensive survey.

The work on the aforesaid survey started in the month of February 1984. The main objective of the survey can briefly be stated as follows:-

- (1) to explore the vocational areas;
- (2) to know the employment potential in the area;
- (3) to know the trend of emerging occupations.
- (4) to explore the field for self-employment;
- (5) to explore the areas in which there is a persistent shortage of required manpower;
- (6) to explore the existing training facilities in the area;
- (7) to identify the vocations for the area.

The data were collected from primary as well as secondary sources.

For the collection of primary data the questionnaires standardised by N.C.E.R.T. were used to collect information from the persons engaged in that particular activity.

Secondly, knowledgeable persons in the field were interviewed.

For collecting secondary data all published data by different agencies were collected.

After fully scrutinising the information, the following areas or family of vocations were identified:-

- I. Agriculture and related vocations:
 - (a) Post-harvest technology.
- II. Horticulture based courses:
 - (a) Fruit and vegetable preservation and processing.
- III. Animal Management based courses:
 - (a) Dairy husbandry.
 - (b) Pig husbandry.
 - (c) Goat rearing and apiculture.

IV. Business and office management:

- (a) Stenography.
- (b) Typewriting.
- (c) Accounting and Auditing.

V. Technical Group:

- (a) Electrical domestic appliances and rewinding.
- (b) Building construction technology.
- (c) Electrical motor rewinding.
- (d) Auto electrical maintenance.
- (e) Motor/Auto repair.
- (f) Auto engineering technician.
- (g) Auto upholsterers.
- (h) Electronics technology.
- (i) Welding technology.
- (j) Painting technology.

VI. Home Science based vocations:

- (a) Food preservation.
- (b) Catering, food and catering technology.
- (c) Cookery restaurant service.
- (d) Dress designing and making.
- (e) Child care and nutrition.
- (f) Creche and pre-school management.
- (g) Hosiery, textile and carpet weaving.

VII. Furniture designing and making:

VIII. Computer technology:

To remove imbalance between the rural and urban areas, to check the migration of population, to create employment and to uplift the standard of living in the rural side the diversification in agricultural activities becomes indispensable. Along with the prevailing subsistence farming some allied activities or activities subservient to agriculture suitable to socio-economic structure of the area need to be started. Animal husbandry is the main allied agricultural activity in the rural areas of U.T. Since Chandigarh is an agri-

culturally backward area having small uneconomic holdings, low yield and inadequate irrigation facilities, animal husbandry can provide supplementary source of income particularly to small and marginal farmers and landless agricultural labour. It can be adopted as a subsidiary occupation. Dairy, piggery, poultry, bee-keeping etc., have good scope because the market for the products of these small units is ensured in Chandigarh city itself with its rapidly growing population. Animal husbandry programmes in Chandigarh had been accorded high priority in VI plan with a view to augmenting milk production and subsidiary foods. Animal husbandry also offers significant employment opportunities to small and marginal farmers. Thus, in this area the following vocations have been identified:

- (1) Dairy technology.
- (2) Pig husbandry.
- (3) Goat rearing and apiculture.
- (4) Post-harvest technology.

Horticulture too has very limited scope in this area because it is a luxury which is to be enjoyed by big farmers only. The gestation period is so long that a farmer of this areas having average holding of 1.1 hectare cannot even dream of it. But at the same time we have Himachal Pradesh, the so-called FRUIT LAND in our neighbourhood. From there we can get the fruits. Thus, a course in Fruit Processing and Preservation can be started.

Hotel Management Courses

The survey shows that hotel management vocation is one of the most promising vocations these days. There has been a tremendous growth of this area over the last decade in this region. In 1971 there were 174 hotels/restaurant/eating-shops whereas this figure rose to 658 in 1981. This registers an increase of 278 per cent. While conducting the survey, the hotel owners were interviewed personally and most of them visualised expansion of this trade and reported that there is persistent shortage in this vocation. The shortage is further established by the fact that there are only about 10 to 15 per cent skilled or professionally trained workers in this trade and the rest are unskilled. Hotel owners express their deep

concern over the non-availability of skilled manpower. They are of the view that if local skilled persons are available they will add to the efficiency of this business.

There is a Food Craft Institute in Chandigarh which trains persons in this field but the number of seats is very limited. The product of this institute hardly stays in Chandigarh. They run to big metropolitan cities where they can have lucrative business. If this training is imparted in schools the local hotels will benefit by their services. Thus, the following sub-areas in this vocation have been identified:

- (1) Cookery and Restaurant service.
- (2) Catering technology.
- (3) Food processing and preservation.

Scope for Development Electronics as a Vocation

In view of the increasing use of electronics industry in Punjab, development of Mohali near Chandigarh as an "electronic township", has been thought of.

It may be noted that there are three very well established units in Mohali. Out of these two deal with electronics and the third one with computers. Moreover, some other firms like PCL, PDD and HARTRON known for electronics are being set up and many small-scale units are cropping up.

There is a strong need of ancillary units to be established in Chandigarh for the up-coming large-scale units. If two years training with emphasis on practical experience is imparted, students can even find self-employment opportunities.

Scope for Computer Vocation

Knowledgeable persons in the field and the informants of commercial sector strongly recommend Computer as a vocation for this modern city. The computer is fast becoming an essential item in our life. It is expected that it will replace ledgers, files, documents and all sorts of temporary records in the near future. In a country like India the computer is dreaded as an unemployment creating device. But computers can be popular in India to a great extent. Instead of finding it a rival, the unemployed people may feel that it is a source of employment and a tool like a typewriter or cyclostyling machine.

If the need for computer programming is from the industrial side then the students will learn Basic/Pascal/Fortran language etc. One Computer with two terminals will give ample practice to all the students of a class.

The technical vocations identified will be introduced later on and the first priority will be given to courses based on agriculture or vocations subservient to agriculture. Unfortunately there is no such institution which caters to the needs of agriculturists of the area. Animal husbandry courses will be given top priority along with Fruit Processing and Preservation Courses. Home science courses will be given second place in the order of priority.

6. VOCATIONALISATION OF EDUCATION IN PUNJAB

The Government of Punjab have decided to fall in line with the national pattern of $10 + 2 + 3$ system of education. It has started functioning from IX class in 1984. Keeping in view the educational requirements, financial constraints and practical consideration, the new system of education would be adopted by the State in a phased manner. Vocationalisation of secondary education would be given due importance in the new scheme of education because of its high employment or self-employment potential and also for meeting the manpower needs of ever-expanding economy and the social matrix.

However, the State of Punjab introduced work-component of education at different stages of education from the academic year 1975-76.

Existing Vocational Scheme

The present vocational education scheme was implemented in 1975, but not as a separate vocational system as envisaged in the national concept of vocationalization at higher secondary stage. It was decided that in the transitional period, students taking vocational subjects in the selected schools may join the main academic stream at the university level or set themselves up in their field of vocation or to go in for further vocational training. This programme, during 1975-76, was introduced in 100 middle schools/middle departments of high/higher secondary schools, at elementary stage and 50 higher secondary schools at secondary stage. In 1980-81, another 100 high schools were brought under the scheme and 100 more high schools have been covered under this scheme in 1982-83.

Steps Taken for Introducing

$10 + 2 + 3$ System of Education

1. At present there exists a vocational cell headed by Deputy Director (Vocationalisation) in the Directorate

- of Education (Schools), Punjab, which is looking after the vocational programmes. A workshop organised on 10 + 2 + 3 from 10-10-1983 to 11-10-1983, recommended for the creation of State Council of Vocational Education.
2. The new 10 + 2 system has been started from the 9th class from the academic session 1984-85.
 3. Syllabus for the 9th and 10th class has been modified by the Punjab School Education Board.
 4. The formulation of criteria for the selection of vocational courses and institutions is under process and is at the stage of finalisation.
 5. District vocational surveys of four districts, viz., Ludhiana, Jalandhar, Gurdaspur and Faridkot, have been conducted and reports have been published which serve as the guidelines for the selection of vocational courses and institutions.

ANNEXURE I

Combined List of Vocations approved up till now (1983) for the Secondary Stage.

Agriculture:

1. Horticulture (Vegetable Growing);
2. Horticulture (Fruit Growing);
3. Animal Husbandry (Poultry, Dairy Husbandry and Dairy Technology).

Civil Engineering:

4. Plumbing;
5. Maintenance and Repairs of Buildings.

Electrical Engineering:

6. Electrical Wiring;
7. Electrical Gadgets (Maintenance and Repairs);
8. Motor Winding.

Electronics:

9. Transistor/Radio (Assembling, Maintenance and Repairs);
10. Television (Maintenance and Repairs).

Mechanical Engineering:

11. Welding;
12. Lathe Work;
13. Diesel Engine (Maintenance and Repairs);
14. Steel Furniture Manufacturing.

Automobiles Engineering:

15. Scooter/Motor Cycle (Repairs and Maintenance);
16. Car (Repairs and Maintenance).

Agro-Mechanics:

17. Repairs and Maintenance of Farm Machinery;
18. Tractor (Repairs and Maintenance).

Chemical Engineering:

19. Preparation of Paints and Varnishes;
20. Electroplating.

Commercial Practice:

21. Typewriting and Shorthand (Punjabi);
22. Salesmanship;
23. Book Keeping and Accountancy;
24. Stores Keeping and Purchasing;
25. Typewriting and Shorthand (English).

Textile Technology:

26. Weaving Technology;
27. Dry Cleaning;
28. Textile Dyeing, Bleaching and Printing;
29. Hosiery Technology;
30. Carpet Weaving.

Manufacturing Sports Goods:

31. Sports Goods (Wood);
32. Sports Goods (Leather).

Manufacture Leather Goods:

33. General Goods.
34. Footwear.

Home Science:

35. Knitting and Embroidery (Hand and Machine);
36. Garment Making;
37. Food Preservation.

Para-Medical:

38. Home Nursing.

Wood Work:

39. Furniture Making;
40. Printing and Composing.

7. VOCATIONALISATION OF EDUCATION IN THE UNION TERRITORY OF PONDICHERRY

The Union Territory of Pondicherry comprises of the former French establishments of Pondicherry, Karaikal, Mahe and Yanam, which are in different parts of the Southern India. Pondicherry is the capital of the Union Territory of Pondicherry and the town is situated in the east coast of the Bay of Bengal about 160 km. south of Madras. Karaikal is also on the same coastal line further 150 km. south of Pondicherry. Both Pondicherry and Karaikal regions are adjoining Tamil Nadu. Mahe is situated on the West Coast near Calicut, adjoining Kerala and is about 700 km. away from Pondicherry. Yanam is situated on the east coast near Kakinada, adjoining Andhra Pradesh and is about 800 km. from Pondicherry.

In Pondicherry and Karaikal region Tamil Nadu system is followed. In Mahe Kerala system and in Yanam region Andhra Pradesh system is followed.

Vocational education at the + 2 stage in the higher secondary school, was introduced in some four selected H. S. Schools in Pondicherry and Karaikal regions to start with, during the year 1978-79. There are 20 higher secondary schools in the union territory and it is proposed to introduce vocational courses in all the Higher Secondary Schools in stages as early as possible, after making detailed survey and assessing the job potential and needs and aspirations of the students of the school and of the community around.

The Technical High School (previously Junior Technical School) attached to the Polytechnic, has been converted into Technical Higher Secondary School and only Vocational Courses are offered in this Institute since the year 1980-81.

As at present the following vocational courses are offered in various higher secondary schools and the Technical Higher Secondary School in Pondicherry:

Electrical motor winding.

Electrical domestic appliances, maintenance and repairs.

Textile technology.

Food preservation.

Plant protection.

Office secretaryship.

Medical Lab. assistant.

Auto mechanic.

Welding.

Radio and Television repairs and maintenance.

Fitting.

General mechanic.

The normal intake in the 11th Std. for each vocational course offered in the higher secondary schools is 25. The intake for the 11th Std. in the Technical Higher Secondary School is restricted to 80 for all the five trades offered. The information about the year of starting, passes etc., are furnished in Annexure I.

The same syllabus as in Tamil Nadu is being followed and the students are appearing for the examinations conducted by the Tamil Nadu Board, as Tamil Nadu pattern is being followed in Pondicherry and Karaikal regions.

At the State Level a Vocational Committee has been set up under the Chairmanship of Education Secretary, heads of various departments and organisations and factories, Academicians, education department officers, principals, etc. constitute the membership.

A vocational survey committee has also been set up with members from various Government departments and organizations, private industrialist, head of concerned Institution in the locality are also being associated with such meetings. Principal of the Polytechnic is the member-secretary who convenes the meetings under the chairmanship of Education Secretary.

Regarding instructional facilities like staff, accommodation, equipments etc., the following information is furnished:

Staff: For the vocational courses offered in the Higher Secondary Schools one post of Vocational Instructor in the subject of the Vocational Course is created in each such school and qualified hands are appointed. Also the engineering teachers who were appointed in the bifurcated schools and prevocational centres are posted in the Schools where vocational courses have been introduced and conducted. Also some of the staff are drawn from other concerned departments on deputation. Qualified persons from private units/industries are also appointed as part-time staff wherever felt necessary.

For conducting the vocational courses in the Technical Higher Secondary School, adequately qualified and experienced staff is available. Also whenever required the teaching staff of the polytechnic are also deputed to handle some of the vocational subjects in their school and give practical training/conduct practical classes in the Engineering Laboratories of the Polytechnic.

Accommodation: At present available accommodation in respective higher secondary schools are being made use of and are just sufficient and adequate in some of the schools and in the other schools necessary accommodation is proposed to be provided as early as possible.

Equipment: Adequate funds are provided to schools for the purchase of various equipment, appliances, tools etc., for conducting practical classes and table experiments in the school itself. In the case of practical classes involving use of Heavy machineries and equipment, the facilities available in the Engineering Laboratories of the Polytechnic are used. Also facilities available in the other departments like Agriculture Department, Health Department, Electrical Department, Govt. Auto Workshop, Private Mills and Industries are being utilised for the conduct of practical experiments, demonstration etc. Efforts are made to make use of available facilities from various sources to the extent possible and also at the same time efforts are made to build up laboratory and other instructional facilities in the schools in a phased manner as far as possible.

Implementation of Special Vocational Education Training Stipendary Scheme

The Union Territory of Pondicherry has taken right steps in implementing the special vocational education training stipendary scheme of the Ministry of Education, Govt. of India for the benefit of students who have passed out + 2 vocational courses in identified areas. Under this scheme 50 placements have been sanctioned to Pondicherry. Students who have passed + 2 vocational courses are selected and placed in the government departments and industries where placements have been secured. Under this programme each selected candidate will be paid a stipend of Rs. 200/- p.m. for six months duration and they undergo practical training in the Industry/Department/Organisation. In most cases candidates may get absorbed in the Industry/Organisation where they were placed for training. For this purpose, even at the time of interview and selection of candidates, the management of the industry/organisation is associated and the representative of the Industry/Organisation/Department will be a member of the selection committee, besides other members from the Board of Apprenticeship Training (Southern Region), Educational authority, Principal of the Higher Secondary School.

The responses from the Industry and other government departments have been very encouraging. The response from + 2 passed out candidates was very good and overwhelming. In fact there were more candidates seeking training placement than the number sanctioned, and we have also exceeded the number allotted and the Govt. of India have been kind enough to provide some more placements for candidates. Sincere efforts have been made by all concerned and the scheme has been launched successfully in the Union Territory of Pondicherry and this Union Territory happens to be the first in the country to implement the above scheme. It is hoped that these schemes will meet with greater success in the years to come and benefit the vocational course candidates who pass out from + 2 stage.

Difficulties/Problems Faced

There are difficulties in proper selection of schools and right type of vocational courses in the absence of proper machinery at the state level to accurately assess the require-

ments of vocational manpower in the locality at the State level and regional levels.

Also, in the absence of the knowledge of clear role the vocational education students are expected to play after + 2 vocational stream, clear certification and recognition of the qualification and prescription of this vocational qualification for entry into jobs in Government departments/organisations and other employment agencies, there have been difficulties in the employment of these vocational stream candidates. Though the concept of self-employment is there, yet it requires to make a headway in a significant way in the context of existing conditions and constraints and lack of adequate confidence and entrepreneurship on the part of individual candidates.

There should be a separate Directorate of Vocational Education with adequate supporting staff and facilities to take effective action required to successfully and meaningfully implement the vocational education programme to provide gainful employment and self-employment to + 2 passed out vocational education candidates.

Action Taken/Proposed to be Taken

It is proposed to strengthen the Administrative machinery at various levels for effective implementation of vocational education at + 2 stage.

Proposal is made to have greater involvement and closer collaboration with Industry and employing organisations and government departments as far as possible.

It is also proposed to arrange suitable programmes and seminars to expose vocational students to the opportunities available and facilities provided by various agencies to encourage entrepreneurs to take up to self-employment as far as possible.

ANNEXURE I

PART-A:

1. Number of Courses Introduced Yearwise:

1978-79	6
1979-80	5

1980-81	Nil
1981-82	Nil.
1982-83	1
1983-84	Nil.

2. Nature of Courses Introduced Yearwise:

- 1978-79: (1) Textile Technology;
 (2) Electric Motor Rewinding;
 (3) Plant Protection;
 (4) Electrical Domestic Appliances, Repair and Maintenance;
 (5) Food Preservation;
 (6) Office-Secretaryship.
- 1979-80: (1) Fitting;
 (2) Welding;
 (3) General Machinist;
 (4) Auto-Mechanic;
 (5) Radio and T.V.

1880-81: Nil.

1981-82: Nil.

1982-83: Medical Laboratory Assistant.

3. Number of Institutions Introducing Vocational Courses Year-wise and Urban/Rural Distribution:

Year	Number of Institutions		Total
	Urban	Rural	
1978-79	1	3	4
1979-80	1	3	4
1980-81	2	3	5
1981-82	3	4	7
1982-83	3	4	7
1983-84	3	4	7

4. Enrolment in Different Courses Yearwise and Boys/Girls Distribution:
 See Table 1. B — Boys G — Girls.
5. Number of Students Appeared in the Final Examination Course and Yearwise.
6. Number of Students Passed, Course and Yearwise, Drop at Percentage.
7. Number of Students Admitted to Higher Academic Professional Institutions.
8. Percentage of Students Wage or Self-employed, (For items 5, 6, 7, 8 — Please see Tables 2).

TABLE 1
Enrolment in Different Courses

Sl. No.	Courses	Sanctioned Intake	1978-79			1979-80			1980-81			1981-82			1982-83			1983-84		
			B	G	B	B	G	B	B	G	B	B	G	B	B	G	B	B	G	
1.	Textile Technology.	25	25	x	25	25	x	22	x	23	x	15	x	16	x					
2.	Electric Motor Rewinding.	25	25	x	25	25	x	25	x	20	x	20	x	20	x					
3.	Plant Protection.	25	25	x	25	25	x	25	x	20	x	25	x	25	x					
4.	Electrical Domestic Appliances.	50	50	x	50	50	x	50	x	40	x	51	x	45	x					
5.	Food Preservation.	25	x	25	x	25	x	30	x	x	26	x	25	x	26					
6.	Office Secretaryship.	25	20	10	18	12	13	14	15	15	15	12	11	13	12					
7.	Fitting.	15	—	—	—	—	—	19	x	19	x	14	x	17	x					
8.	Welding.	15	—	—	—	—	—	07	x	07	x	08	x	06	x					
9.	General Machinist	15	—	—	—	—	—	12	x	12	x	13	x	08	x					
10.	Auto Mechanic.	15	—	—	—	—	—	17	x	17	x	12	x	11	x					
11.	Radio and Television.	15	—	—	—	—	—	16	x	16	x	15	x	12	x					
12.	Medical Laboratory Assistant.	25	—	—	—	—	—	—	—	—	—	20	10	16	14					

TABLE 2

*Vocational Students in Pondicherry Union Territory***TEXTILE TECHNOLOGY**

<i>Year</i>	1	2	3	4	5	6	7	8	9
1978-79	25	25	x	x	x	x	x	x	x
1979-80	25	25	02	23	04	01	01	x	08
1980-81	25	22	04	18	05	01	02	x	18
1981-82	25	23	05	18	05	01	01	x	21
1982-83	25	15	02	13	10	02	02	x	13
1983-84	25	16	02	14				x	12

ELECTRIC MOTOR WINDING

<i>Year</i>	1	2	3	4	5	6	7	8	9
1978-79	25	25	x	x	x	x	x	x	x
1979-80	25	25	x	25	02	01	01	x	x
1980-81	25	25	06	19	05	01	02	x	24
1981-82	25	20	04	16	04	01	01	x	20
1982-83	25	20	04	16	08	02	01	x	20
1983-84	25	20	03	17				08	15

FOOD PRESERVATION (GIRLS ONLY)

<i>Year</i>	1	2	3	4	5	6	7	8	9
1978-79	25	25	x	x	x	x	x	x	x
1979-80	25	25	3	22	8	2	x	x	12
1980-81	25	30	1	29	5	1	x	x	3
1981-82	25	26	1	25	13	2	x	x	4
1982-83	25	25	4	21	17	3	1	x	16
1983-84	25	26	1	25	—	—	—	10	4

OFFICE SECRETARYSHIP

<i>Year</i>	1	2	3	4	5	6	7	8	9
1978-79	25	30	x	x	x	x	x	x	x
1979-80	25	30	4	25	16	2	2	x	13
1980-81	25	27	x	27	13	1	2	x	x
1981-82	25	30	4	26	19	3	3	x	13
1982-83	25	23	3	20	8	1	1	x	14
1983-84	25	25	4	21	—	—	—	18	16

GENERAL MACHINIST

<i>Year</i>	1	2	3	4	5	6	7	8	9
1978-79	x	x	x	x	x	x	x	x	x
1979-80	x	x	x	x	x	x	x	x	x
1980-81	15	12							
1981-82	15	12	x	12	10	2	3	x	x
1982-83	15	13	x	13	8	29	2	x	x
1983-84	15	8	x	8	—	x	x	x	x

AUTO MECHANIC

<i>Year</i>	1	2	3	4	5	6	7	8	9
1978-79	x	x	x	x	x	x	x	x	x
1979-80	x	x	x	x	x	x	x	x	x
1980-81	15	17							
1981-82	15	17	x	17	13	1	3	x	x
1982-83	15	12	x	12	9	1	2	x	x
1983-84	15	11	x	11	—	—	—	7	x

PLANT PROTECTION

<i>Year</i>	1	2	3	4	5	6	7	8	9
1978-79	25	25							
1979-80	25	25	x	25	10	1	2	x	x
1980-81	25	21	5	16	7	1	2	x	24
1981-82	25	25	3	22	8	1	1	x	12
1982-83	25	25	2	23	4	x	2	x	8
1983-84	25	25	1	24	—		10	10	4

ELECTRIC DOMESTIC APPLIANCES

<i>Year</i>	1	2	3	4	5	6	7	8	9
1978-79	50	50							
1979-80	50	50	1	49	15	2	3	x	2
1980-81	50	50	7	43	36	2	3	x	14
1981-82	50	40	3	37	12	2	4	x	75
1982-83	50	51	2	49	17	3	3	x	4
1983-84	50	45	2	43				12	4

FITTING

<i>Year</i>	1	2	3	4	5	6	7	8	9
1978-79									
1979-80									
1980-81	15	19							
1981-82	15	19	x	19	9	1	2	x	x
1982-83	15	14	x	14	11	x	1	x	x
1983-84	15	17	x	17	—			x	x

WELDING

<i>Year</i>	1	2	3	4	5	6	7	8	9
1978-79									
1979-80									
1980-81	15	7							
1981-82	15	7	x	7	3	x	x	x	x
1982-83	15	8	x	8	3	x	1	x	x
1983-84	15	6	x	6	—		—	x	x

RADIO AND TELEVISION

<i>Year</i>	1	2	3	4	5	6	7	8	9
1978-79									
1979-80									
1980-81	15	16							
1981-82	15	16	x	16	8	1	1	x	x
1982-83	15	15	x	15	3	x	1	x	x
1983-84	15	12	x	12				x	x

MEDICAL LABORATORY ASSISTANT

<i>Year</i>	1	2	3	4	5	6	7	8	9
1978-79									
1979-80									
1980-81									
1981-82									
1982-83	25	30							
1983-84	25	30	x	30	—			x	

* 1. Sanctioned Intake.

2. Admitted.

3. Drop Outs.
- * 4. Appeared.
5. Passed.
6. Admitted to Higher Academic/Professional.
- * 7. Wage/Self Employed.
8. Apprenticeship Provided.
9. Drop Out Percentage.

8. VOCATIONAL EDUCATION IN TAMILNADU

In Tamilnadu the 10 + 2 + 3 system was introduced in 1978-79 as a first step to make education common to all. The vocational stream of education was started after a careful study survey of the different stages experienced by the different states. Hence, it is no wonder that it has made much headway dispelling the many fears entertained by the conservatives.

In the sixth five year plan (1981-85) the following educational objectives are cited.

1. Learning while earning and dignity of human labour;
2. Learning technical skills of economic relevance;
3. Learning through socially relevant activities;
4. Higher education with opportunities for employment especially with self-employment; and
5. Stress on the creation of new facilities in technical and vocational institutes, particularly in rural areas.

The Higher Secondary education system in Tamilnadu has all these salient features. Since the course is terminal for some and preparatory for higher studies for others, the courses of study are suitably designed. Among the six states Tamilnadu accounts for the largest number of enrolment and has gone in for greater diversification and correlation of the different courses to those offered at the higher levels in the polytechnics and professional colleges.

The Higher Secondary Education was introduced first in 912 schools as the first stage and 1,25,000 students were admitted in these schools. There are two streams. In the vocational stream the course of study are divided into six major divisions. They are: (1) Agriculture, (2) Home Science, (3) Business Managements & Trade, (4) Engineering and Technology, (5) Health, (6) Miscellaneous.

TABLE 1

The Position of Vocational Education in the Higher Secondary Schools in Tamilnadu

<i>Year</i>	<i>Number of Higher Secondary Schools</i>	<i>H.S.S. with Vocational Education</i>	<i>Number of Vocational Education Given in all the H.S.S.</i>	<i>Number of Students Taking Vocational Education</i>
1978-79	912	709	1,153	24,400
1979-80	1,094	914	1,344	52,000
1980-81	1,257	944	1,510	57,100
1981-82	1,342	1,014	1,602	58,520
1982-83	1,357	940	1,432	57,258

(Ref: Report of the High Power Committee 1982 December).

In 1980-81 in the whole of India nearly 84,104 students received vocational education. In this nearly 57,100 students belong to Tamilnadu.

In 1948 the modified educational system came into existence in Tamilnadu. In the beginning the students had to take the bifurcated course from standard IX. Later on it was reduced to two years. Engineering, Agriculture, Weaving and Teachers' Training were the important subjects taught in the 350 selected schools. But it was not welcomed by the people due to certain defects.

In 1975 according to the new educational changes, the vocational subjects which would lead to employment opportunities were taught in schools, after the school hours. Recurring and non-recurring grants were given to those schools for the purpose.

In 1978 those subjects were introduced in schools at the plus two stage.

Implementation of the New Scheme in Tamilnadu

Tamilnadu is very particular in implementing the Vocational education in all the schools. There are 1416 higher secondary schools in Tamilnadu, among these 940 schools have vocational education courses, 49 different vocational subjects

are taught in these schools. Admission of students in these courses are more in Tamilnadu than in any other states.

Tamilnadu Educational System is not a Reform, it is a Revolution

Even in 1966 Kothari Education Commission recommended that vocational education system should be introduced in higher secondary schools. After that the Report of NCERT (1976), the report of Sabhanayakam Committee (1977) and Adisheshaiah Committee Report (1978), discussed elaborately the educational reform.

The Educational Progress in Tamilnadu

The Ten Plus Two system was introduced in some of the states from 1978 based on the recommendation of the Indian Education Commission. But there is a speciality in implementing this scheme in Tamilnadu. The pre-university system was abolished in the colleges and the plus two system is introduced for students who have completed the ten year schooling. The importance of this scheme is that higher education, to a certain extent, is made available even in rural areas. Students who are unable to study the pre-university course previously can get the twelve year education in their school itself.

Vocational education stream was introduced in 709 schools even in the first year. Among the total number of students in India who are receiving vocational education, $\frac{1}{3}$ of students belong to Tamilnadu. Thus, it is really a revolution to introduce vocational education in a number of schools and thus enable the student population to be benefited by it.

A Comparison with Other States

In Maharashtra the students have to study a language and a general subject or one vocational subject according to students' liking. Students liking the general stream study four subjects while the vocational students have to study three or four science or art subjects.

In Karnataka the students of general stream as well as vocational stream have to learn two languages. Nearly 50 to 60 hours are spent for vocational education alone. The time spent for theory and practical is in the ratio of 1:2.

In West Bengal the vocational group students learn nearly 50% of the subjects learnt by the general group students. The rest 50% is spent for learning vocational subjects. Half of the portions in the syllabus is allotted for vocational subjects. The remaining half should be learnt as link subject.

In Gujarat the system is entirely different. Diploma Courses from 6 months to 2 years and certificate courses are there. Three year Diploma Courses for Banking, Accountancy, Trade and Commerce are taught.

In Tamilnadu for both general and vocational courses two languages are taught for 23 hours. The vocational students have to learn along with general students one subject in the third group Science or Arts. Among the remaining three subjects two or three are vocational subjects. Nearly 50 to 60% time is allotted for teaching vocational subjects.

In Andhra Pradesh two languages-are taught. Nearly 32% to 77% time is allotted for learning vocational subjects. For agriculture and home science 32% of time alone is allotted but for trade and commerce 77% time is given. There is no chance for students to change the courses from general to vocational or vice-versa.

In Tamilnadu full-time and part-time teachers are teaching vocational subjects. At present there are 491 full-time teachers and 4342 part-time teachers. Since the remuneration to part-time teachers is meagre it does not attract fully-qualified teachers. Pre-service training in vocational education is not given to teachers.

The students taking vocational education at the plus two stage are eligible to join Engineering, Agriculture, animal husbandry, and Science and Arts subjects i.e., instructions of higher education. No provision is made for the employment of the vocational students after completion of their course. In West Bengal the vocational students are permitted to write entrance Examination for job-oriented higher education course.

There is difference in administration also between states. The organisation is not the same in any two states. In Tamilnadu it is administered by the Director of School Education. Moreover, to give advice at the state level, there is a vocational educational committee at the plus two stage.

In Gujarat also it is administered by the Director of School Education. There are Directors for Vocational Education, employment opportunity and cottage industries. They work as a team.

In Karnataka a separate directorate is established and joint directors are appointed to administer the scheme. The Board of Vocational Education is giving diploma at the end of plus two for vocational students. In Andhra five divisional officers are helping the Director of Higher Education in this respect. In Maharashtra it is under the control of the Director of Vocational Education. Divisional Directors, District Vocational Officers are there to assist him. The Board of Higher Secondary Education prepares not only the syllabus but also conducts examination. In West Bengal the Director of school education himself looks after the Vocational Education also. Examinations are conducted by the Board of Higher Secondary Education.

The Present Position of Vocational Education in Tamilnadu

The number of students opting for vocational education is the highest in Tamilnadu compared to other states. But it has not yet become very popular among parents and students. The employment opportunities are also very limited. After completing the + 2 stage, the students have no opportunity to have higher vocational education.

The committee under the chairmanship of Dr. V. C. Kulandaisamy, Vice Chancellor of the Anna University of Technology, has finalised its report and submitted it to the Government. The committee has categorically stated that "the work in the area of curricular development has so far remained rudimentary. Generally it appears that the states have not so far made significant efforts to develop and provide instructional materials for the vocational stream". (1982).

The setting up of a state council of vocational education, appointment of an Additional Director of school education (Vocational), setting up of a vocational survey unit in the Directorate of school education, a Board of Studies for each of the six vocational areas, review of the grant scheme to schools for vocationalised courses were some of the major

recommendations of the committee. Thus, in Tamilnadu steps were taken to make the implementation of vocational education very effective.

The introduction of vocational streams, in the plus two stage, has completely changed the approach to education and more young students are now opting for the plus two vocational courses. The young pupils are now assured of schooling and they step into the world with better confidence and equipment.

TABLE 2
The Structure of Higher Secondary Education in Different States

States or Union Territories	Language		Science or Art Subjects		Vocational Subjects	
	Allot-ment of Time Pre-sent	Allot-ment of Time and General Sub-jects	Number of Subjects	Allot-ment of Time Pre-sent	Total Number of Sub-jects	Allot-ment of Time Pre-sent
1. West Bengal	20	—	3	30	1	50
2. Delhi	1	—	1 or more	25-30	1	50-60
3. Karnataka	2	—	1 or above that	15-28	1	50-60
4. Gujarat	1	6	"	25-30	1	"
5. Maharashtra	1	—	3	50	1	33-34
6. Andhra Pradesh	1	—	2	40	1	32-77
7. Tamilnadu & Pondicherry	2	—	1 or 2	17-37	1	40-60
						Moral Instructions 3
						Arts Subjects & Combined Subjects

Taken from the Report to make Higher Secondary Education as Vocational biased.

9. VOCATIONALISATION OF EDUCATION IN ASSAM

It is noticed that a modest attempt has been made in Assam towards vocationalisation of education by introducing eleven courses.

The courses are broadly categorised into the following areas:

- (a) Engineering-based.
- (b) Agro-based,
- (c) Commerce based —
 - (i) Secretarial,
 - (ii) Banking.

The details are given in table I and II given below:

TABLE I

*Subjects Introduced at the + 2 Stage
Vocational Stream and their Schoolwise Distribution*

1. (A) Compulsory Subjects:

- 1. English;
- 2. Assamese;
- 3. Foundation Courses.

(B) Vocational Electives:

- 4. Bar-bending and Reinforcement;
- 5. Masonry and Building Carpentry;
- 6. Stenography and Typewriting;
- 7. Secretarial Practice;
- 8. Accountancy and Auditing;
- 9. Banking;
- 10. Workshop Practice;

11. Electrical Appliances;
 12. Agricultural Chemicals;
 13. Fundamentals of Field and Horticultural Crops;
 14. Co-operation.
-

2. Schoolwise Distribution:

<i>Sl. No.</i>	<i>School</i>	<i>Vocational Subjects</i>
1.	Gopal Bore H.S. School Dispur (Urban).	<ol style="list-style-type: none"> 1. Bar-bending and Reinforcement; 2. Masonry and Building Carpentry; 3. Secretarial Practice; 4. Stenography and Typewriting.
2.	Puranigudam H.S. School, Nowgong (Rural).	<ol style="list-style-type: none"> 1. Stenography and Typewriting; 2. Accountancy and Auditing; 3. Secretarial Practice; 4. Banking.
3.	Kampur H.S. School, Nowgong (Rural).	<ol style="list-style-type: none"> 1. Stenography and Typewriting; 2. Secretarial Practice; 3. Accountancy and Auditing; 4. Banking; 5. Co-operation.
4.	Borholla H.S. School, Sibasagar (Rural).	<ol style="list-style-type: none"> 1. Workshop Practice; 2. Electrical Appliances.
5.	Lohit Dikrong H.S. School, Lokhimpur (Rural).	<ol style="list-style-type: none"> 1. Agricultural Chemicals; 2. Fundamentals of Field and Horticultural Crops.

TABLE II
Curriculum for the Vocational Stream of the + 2 Stage

Group	Objective	Area	Subject	Marks
GROUP-A	General Competence (Linguistic).	Language	1. English, 2. M.I.L., 3. Foundation Courses,	100 100 200
GROUP-B	General Competence (Vocational). Entrepreneurship — Business Organisation Co-operation, Energy Problems, etc.	Vocational Foundation		
GROUP-C	General Competence — (a) For pursuing general courses (optional). (b) For augmenting vocational courses.	Academic	4. Similar to H.S. Courses in Humanities Science etc. Maximum 2 Subjects.	200×1 or 200×2
GROUP-D	Vocational Competence —	Vocational Subjects	5. As per list Minimum: 2, Maximum: 3 Subjects.	200×2 or 200×3

NOTE: GROUP C

- (i) One may offer one or two subjects from this group or may not offer any if one so desires;
- (ii) Unless two related subjects in the same stream are offered, one shall have no claim for consideration for admission into academic or professional Degree courses after completion of the + 2 stage;

- (iii) In case one offers two subjects from this group, one of these will be taken as additional subject;
- (iv) When only one subject is offered from this group it will be compulsory for one who takes up only two vocational subjects in Group D. If someone takes three subjects in Group D, then the one (if any) taken from Group C will be either compulsory or additional as decided upon by the candidates.

GROUP D

- (i) A minimum of two subjects will have to be taken by a candidate from this group;
- (ii) If three subjects (maximum) are offered by someone, he/she may not offer any subject or may offer only one subject from Group C. In the latter case, any one of the four subjects thus taken from Group C and D will be treated as additional as desired by the candidate. Such a candidate will have a better vocational base and will have wider avenues for employment or self-employment. However, they will have limited vertical mobility.

Schools have been directed to restrict admission to 10 pupils per area. Restriction of boys/girls to different subjects are not enforced during this year.

Although 19 schools were selected by Government during 1983-84 academic session only five schools have opted for immediate introduction of vocational courses. These are shown at Table I.

Of these one is in urban area (Greater Gauhati), while the rest are in rural and semi-rural areas.

Selection of courses was made after an elaborate exercise of meetings and discussions with the schools. The needs of the society, availability of material, expertise and the prospects offered by the subjects were duly considered. Care has been taken not to duplicate any subject/trade running in the I.T.I.s, Polytechnics in the State. The prospects of job potential and self-employment of the students after completion of the course have also been carefully looked into.

Revision of the syllabi at present is not considered since the vocational course has just been introduced. However, action has been taken to receive feedback reports from the schools where subjects have been introduced so as to enable the Board/Government to revise the syllabi suitably, if needed.

Schools situated in rural, semi-rural and urban areas have been selected. Further, schools already having teachers, equipment, etc., were considered on priority basis. Schools with left-out equipment, apparatus, books, etc., of the pre-vocational courses (introduced earlier as per Mudaliar Commission's suggestion at 8-11 year schooling) are also considered and preferred.

Schools are directed to select students on the basis of merit and aptitude. However, Principals are advised to meet the pupils, put forth the prospects etc., of the vocational courses for their life and livelihood before they are admitted into the course on their choice.

Along with intra-school provisions, help would be obtained from the available facilities in neighbouring industry/factory/society/farm and enterprises in public or

private sectors. Arrangements have been made to contact the above managements by the Principals and the Government officials for extension of facilities needed for practical training.

The 'learning units' in all the subjects are prepared for the use of the teacher and the pupil alike. Since text books are difficult to obtain (and not yet prepared), arrangements are being made so that these 'learning units' are made available to each learner. After their use feedback will be collected and the material corrected before these are finally printed. These are expected to serve as base materials for the future production of text books.

Teachers are appointed on part-time basis. They are experienced persons. Part-time allowance at the rate of Rs. 200/- per month has been sanctioned by the Government.

The scope of vertical mobility is also worked out for students who want to go for general education. For deciding such mobility in the general university course, the two universities are being requested to accommodate willing candidates by making necessary adjustments in the admission requirements.

There was a Plan budget provision for the year 1983-84 for Rs. 4.08 lakhs given as the non-recurring grants to selected 17 higher secondary schools under plains district and 2 higher secondary schools under hills districts for which an amount of Rs. 0.48 lakhs has been specially provided. Each selected school has been provided with the following funds:

1. For extension of building	Rs. 12,000
2. Furniture	Rs. 10,000
3. For purchase of library books	Rs. 1,500
4. Contingency	Rs. 500
	<hr/>
	Rs. 24,000

In addition to this, each school has been provided with 3 part-time teachers on a monthly remuneration of Rs. 200/- per month.

In the current year's budget Rs. 4.00 lakhs have been earmarked for vocational education. This amount is not considered adequate since some more schools are to be selected to open vocational courses in the academic session 1984-85 and more funds should be released to the schools for purchase of equipment and apparatus and for the 2 more part-time teachers to the selected schools.

At present the entire work of administration has been taken up by the D.P.I., Assam. One D.D.P.I. is taking charge of this work. Further, Government is examining if one full-time Joint Director for this scheme can be provided so that the implementation of this scheme can be vigorously and smoothly pursued. So far as the academic part is concerned the Board of Secondary Education, Assam is entrusted to release syllabi and other materials to the school directly. One Academic Officer of the Board has been entrusted to look into the affair. He is preparing different reading materials and reference notes in consultation with experts in the various fields. Schools have been directed to contact the Board of Secondary Education, Assam for smooth implementation of the academic matters and for expert help. At the Secretariat level the work on vocational education has been entrusted to one officer on Special Duty.

10. VOCATIONALIZATION OF EDUCATION IN TRIPURA

The 10 + 2 + 3 pattern of education has been introduced in Tripura since 1976. Out of the existing eightythree of the total number of + 2 stage schools 41 offer only Arts stream, 11 offer two streams (Arts and Commerce), 9 offer Arts and Science streams and 22 all the three streams, namely, Arts, Science and Commerce, respectively. Among these schools, 45 are situated in rural areas.

From an analysis of the results of + 2 stage higher secondary examinations conducted by T.B.S.E. during 1982 it appears that out of 3500 students who had passed the + 2 stage examination nearly 3300 applied for admission to different degree colleges in Tripura. Out of the remaining 200, some preferred higher education in medical, engineering and allied subjects outside the State and a few might have secured some sort of employment while a few remained unemployed or semi-employed. It may, therefore, be assumed that the general trend is in favour of higher education. As against this trend, the number of educated or partially educated persons is no less than several thousands. The number of registered educated unemployed with minimum qualification of Matriculation stood at about thirtynine thousand as on 31-3-83. This figure might also include some who had secured a job in the meantime. The number of Graduates was 5,540 and that of M.A. was 225 during the same period.

The urgency for introducing vocationalization need not be emphasised. But it may not be out of place to mention that the action plan for introducing the scheme should be pragmatically developed on the basis of field surveys on the trends of employment. In this connection it may be mentioned that a district level survey was conducted in West Tripura district in the year 1978. The survey report recommended the following courses under different broad sectors:

(A) Agriculture:

- (i) horticulture, preservation of fruits and vegetables;

(B) Technical:

- (i) farm equipment servicing and maintenance;
- (ii) automobile servicing and maintenance;
- (iii) electrical servicing;

(C) Trade and Commerce:

- (i) office procedure and routine;
- (ii) Stenography;
- (iii) co-operative organisation;
- (iv) salesmanship and advertising;

(D) Paramedical:

- (i) pharmacy;
- (ii) multipurpose health education, etc.

In the Action Plan some more vocations, viz., Poultry and Dairy, Fisheries, Solar Energy, Bio-gas production, Leather Tannery, Spray Painting, Footwear Manufacturing, Water Supply and Sanitary Services etc. have been suggested.

It needs no emphasis that fresh district level surveys should be taken up. This work will be taken up under the guidance and supervision of District Level Advisory Committees.

The Action Plan formulated in the orientation workshop held in Mysore in November, 1983, is under consideration of the Government. It is observed that certain items such as district survey, administrative supervision, curriculum design and instructional materials, infrastructural facilities and teacher preparation etc. are to be looked into before the scheme is implemented. These items come under three components, viz., formulation of policy, coordination and accreditation, to be resolved at the beginning.

It is observed that there should be one officer at the State level to look after progress of the scheme. Supervision at the district level may be done by the Deputy Directors posted in the districts. At the institution level, the Assistant

Headmaster should remain in exclusive charge under the general supervision and control of the Headmaster.

The administrative machinery to be built up at the State and district level shall function according to the guidelines formulated by the State Level Advisory Committee and District Level Advisory Committee. It is also expected that these committees will also function as coordinating units in regard to all government departments, autonomous bodies and industrial production units. These committees are expected to be constituted after approval of the Action Plan by the Government.

The arrangements for research, development and training support may be made by the State Institute of Education as far as practicable.

In Tripura there is no Board or Council for Higher Secondary Examination like West Bengal. Tripura Board of Secondary Examination is conducting the higher secondary examination also. Examination in vocational courses may be conducted by the same Board. The Board has already been requested to examine the vocations suggested in the Action Plan and offer views.

The Action Plan proposed that three institutions may be identified for introduction of the scheme during the year 1985. Unfortunately, it may not be possible to take up three institutions at the first phase due to lack of adequate financial support. Regarding financial input it was brought to the notice of NCERT that implementation of the scheme largely depends on allocation of adequate fund by the Planning Commission. NCERT was also requested to take up the issue with the Planning Commission at the appropriate level. In regard to budgetary provision for the year 1984-85, it may be mentioned that a sum of Rs. 0.50 lakh only has been provided for introduction of vocational education in one institution. The institution will be identified shortly.

It is needless to state that the curriculum and syllabi for the State shall have to be developed separately keeping in view its peculiar demographic and economic conditions, the growing problem of unemployment, job opportunities, felt needs of the society and the need of keeping symbiotic link between institutions and production units. While developing

the design of curriculum and preparing instructional and reading materials to be adopted in Tripura, the curriculum material prepared by NCERT will, no doubt, come to be of great help. The courses will be selected on the basis of suitability and availability of teachers. The scope of vertical and horizontal mobility will also be looked into.

11. VOCATIONALISATION OF EDUCATION IN ORISSA

The Council of Higher Secondary Education was constituted by an Act of the Orissa Legislature on September 7, 1982 to organize the Higher Secondary or + 2 stage of education in the state. It was not possible to upgrade the High School to the Higher Secondary Level because of the infrastructural inadequacies obtaining in most of the schools. Convenience and feasibility were the factors taken into consideration while introducing the higher secondary classes in the existing colleges of Orissa. Some public sector high schools, however, were permitted to open the higher secondary classes.

Vocationalisation, the primary focus of the new pattern of education at the + 2 stage, could not be introduced readily. To plan for its implementation a State Level Steering Committee was formed by Government under the Chairmanship of the Secretary, Education and Youth Services Department. Heads of Departments and experts in different vocational areas were taken in as members. The Committee was of the view that vocationalisation could be introduced from the academic session 1984-85, after finalising the whole process of implementation. The Council was directed by the Steering Committee to prepare syllabi and courses of studies in vocational areas likely to create a stir in the job-market. The Council organised a Workshop-Cum-Seminar in collaboration with the NCERT and decided to adopt a course-structure that would give the students in the vocational stream confidence and proficiency for wage or self-employment. The recommendations of the seminar were endorsed by the Steering Committee, and the courses and areas identified were accepted. The Academic Committee of the Council, however, modified the suggestions and recommendations to suit the

local conditions, and the accepted course-structure is as follows:-

1. (a) Languages: English (Functional)	100	Marks
(b) M.I.L. (Oria)	50	"
2. General Foundation Course	50	"
3. The Core Vocational Course with 40% to 60% emphasis on practicals	600	"
4. Supportive/Vocational specific or related basic (Science) subject	200	"
TOTAL		1000 "

So far a separate Directorate or a separate administrative body has not been formed. Budgetary provisions for the vocationalisation programme have not been made. District vocational surveys too were not taken up as time was short, and identification of courses urgent. The Heads of Departments and other employing agencies were consulted and according to their suggestions, based on the felt needs of the society, the vocational areas and courses were selected. The Council then prepared syllabi and courses of studies with the help of experts from different technical areas. The areas and courses in which courses of studies have been prepared are as follows:-

Vocational Stream

(a) Agricultural Areas:

- (i) Crop Production;
- (ii) Plant Protection;
- (iii) Fertilizer and Agriculture Chemicals;
- (iv) Horticulture;
- (v) Floriculture and Ornamental Gardening.

(b) Animal Husbandry Area:

- (i) Sheep and Goat Farming;
- (ii) Poultry Farming;
- (iii) Dairy Farming;
- (iv) Pig Farming.

(c) Home Science Area:

- (i) Catering;
- (ii) Food Preservation;
- (iii) Nutrition.

(d) Commerce and Business Area:

- (i) Insurance;
- (ii) Material Management;
- (iii) Secretarial Practice;
- (iv) Salesmanship and Advertisement;
- (v) Co-operative Management;
- (vi) Stenography and Typewriting;
- (vii) Marketing and Salesmanship;
- (viii) Accounting.

(e) Performing Arts:

Odissi Music: Vocal or
 Odissi Music: Instrumental-pakhawaj or
 Odissi Dance or
 Chhou Dance or
 Hindustani Music: Vocal or
 Hindustani Music: Instrumental-Tabla or Sitar or
 Flute or Violin.

(f) Engineering and Technology:

- (i) Automobile Mechanism,
- (ii) Furniture-making and cabinet-designing,
- (iii) Electrical wiring and servicing of Electrical appliances.

The State is trying to introduce as many courses as possible with effect from 1984-85. The courses that are likely to be introduced are:-

Insurance, Wireless Telecommunication and Radio Officer's Course, Dairy, Poultry, Sericulture, Wiring, Cabinet-making, Automobile mechanism (Two wheelers) etc. But the basic constraint is money. The State does not have enough resources to cater to the needs of the traditional academic

streams already operating. Next year, i.e., 1984-85, it is expected that there will be about 80 thousand enrolment and the infrastructure to accommodate them is inadequate. Hence, the vocational stream may not get the priority it deserves. It is expected that the budgetary allocations in the 7th plan would be favourable to the implementation of the vocational programme. If money would be forthcoming the State can go in for more ambitious projects.

The first of these is the fact that the United States is a young nation. It has only been about 150 years since it was founded. This is a very short time in the history of the world. Yet in this short time, the United States has achieved many great things. It has become a world power, a leader in science and technology, and a model of democracy. It has also made many mistakes, but it has learned from them and grown stronger. The second fact is that the United States is a diverse nation. It is made up of people from many different backgrounds, races, and religions. This diversity is one of its strengths, as it allows the United States to draw on the talents and ideas of many different people. The third fact is that the United States is a nation of immigrants. Most of the people who live in the United States today are descendants of immigrants from other countries. This has helped to shape the United States into the nation it is today.

The fourth fact is that the United States is a nation of opportunity. It is a place where anyone can achieve success if they work hard and have the right opportunities. This is one of the reasons why so many people from other countries want to come to the United States.

The fifth fact is that the United States is a nation of freedom. It is a place where people are free to express their opinions, to worship as they please, and to live their lives as they see fit. This is one of the reasons why the United States is so respected around the world.

The sixth fact is that the United States is a nation of progress. It is a place where new ideas are always being tried, and where progress is always being made. This is one of the reasons why the United States is so successful in many areas.

The seventh fact is that the United States is a nation of hope. It is a place where people believe in a better future, and where they are always working to make it a reality. This is one of the reasons why the United States is so resilient in the face of adversity.

The eighth fact is that the United States is a nation of love. It is a place where people care for each other, and where they are always trying to make the world a better place. This is one of the reasons why the United States is so beloved around the world.

The ninth fact is that the United States is a nation of peace. It is a place where people live in harmony, and where they are always trying to resolve their differences peacefully. This is one of the reasons why the United States is so respected around the world.

The tenth fact is that the United States is a nation of justice. It is a place where people are treated fairly, and where the law is always upheld. This is one of the reasons why the United States is so respected around the world.

The eleventh fact is that the United States is a nation of courage. It is a place where people are always willing to stand up for what is right, and where they are always trying to make a difference. This is one of the reasons why the United States is so respected around the world.

The twelfth fact is that the United States is a nation of faith. It is a place where people believe in something greater than themselves, and where they are always trying to live by their faith. This is one of the reasons why the United States is so respected around the world.

PART — XIII

VOCATIONALISATION OF EDUCATION AT THE HIGHER SECONDARY STAGE

- Concept
- Public Acceptance
- Location
- Vocational Education for Rural, Tribal and Urban Poor
- Significance of S.U.P.W., as a case for +2 Stage of Vocationalisation
- On-the-Job Training
- Modification of Recruitment Rules
- Terminality
- Course Structure
- Duration
- Teacher Availability and Training
- Evaluation
- Financing for Self-employment
- Vocational Education at the Tertiary Stage
- Special Degree Courses
- General Degree Courses
- Professional Degree Courses
- Management System
- National Level
- Regional Level
- State Level
- District Level
- Institutional Level

TABLE - I

THE RESULTS OF THE INVESTIGATION AT THE
VICTIM'S RESIDENCE

1. Name of Victim	2. Name of Suspect
3. Name of Witness	4. Name of Neighbor
5. Name of Police Officer	6. Name of Doctor
7. Name of Lawyer	8. Name of Judge
9. Name of Jury	10. Name of Jury Foreman
11. Name of Jury Clerk	12. Name of Jury Stenographer
13. Name of Jury Bailiff	14. Name of Jury Usher
15. Name of Jury Sergeant	16. Name of Jury Constable
17. Name of Jury Marshal	18. Name of Jury Captain
19. Name of Jury Lieutenant	20. Name of Jury Sergeant
21. Name of Jury Constable	22. Name of Jury Bailiff
23. Name of Jury Usher	24. Name of Jury Stenographer
25. Name of Jury Clerk	26. Name of Jury Foreman
27. Name of Jury Captain	28. Name of Jury Lieutenant
29. Name of Jury Sergeant	30. Name of Jury Constable
31. Name of Jury Bailiff	32. Name of Jury Usher
33. Name of Jury Stenographer	34. Name of Jury Clerk
35. Name of Jury Foreman	36. Name of Jury Captain
37. Name of Jury Lieutenant	38. Name of Jury Sergeant
39. Name of Jury Constable	40. Name of Jury Bailiff
41. Name of Jury Usher	42. Name of Jury Stenographer
43. Name of Jury Clerk	44. Name of Jury Foreman
45. Name of Jury Captain	46. Name of Jury Lieutenant
47. Name of Jury Sergeant	48. Name of Jury Constable
49. Name of Jury Bailiff	50. Name of Jury Usher
51. Name of Jury Stenographer	52. Name of Jury Clerk
53. Name of Jury Foreman	54. Name of Jury Captain
55. Name of Jury Lieutenant	56. Name of Jury Sergeant
57. Name of Jury Constable	58. Name of Jury Bailiff
59. Name of Jury Usher	60. Name of Jury Stenographer
61. Name of Jury Clerk	62. Name of Jury Foreman
63. Name of Jury Captain	64. Name of Jury Lieutenant
65. Name of Jury Sergeant	66. Name of Jury Constable
67. Name of Jury Bailiff	68. Name of Jury Usher
69. Name of Jury Stenographer	70. Name of Jury Clerk
71. Name of Jury Foreman	72. Name of Jury Captain
73. Name of Jury Lieutenant	74. Name of Jury Sergeant
75. Name of Jury Constable	76. Name of Jury Bailiff
77. Name of Jury Usher	78. Name of Jury Stenographer
79. Name of Jury Clerk	80. Name of Jury Foreman
81. Name of Jury Captain	82. Name of Jury Lieutenant
83. Name of Jury Sergeant	84. Name of Jury Constable
85. Name of Jury Bailiff	86. Name of Jury Usher
87. Name of Jury Stenographer	88. Name of Jury Clerk
89. Name of Jury Foreman	90. Name of Jury Captain
91. Name of Jury Lieutenant	92. Name of Jury Sergeant
93. Name of Jury Constable	94. Name of Jury Bailiff
95. Name of Jury Usher	96. Name of Jury Stenographer
97. Name of Jury Clerk	98. Name of Jury Foreman
99. Name of Jury Captain	100. Name of Jury Lieutenant

CONCEPT

In the present-day context of rapid industrialisation and economic development, it is felt that the general education system is not adequate to meet the growing demands of the diversifying economy. It is generally felt that the varied needs of the growing economy can be effectively met through diversified vocational courses at the higher secondary stage. The aim of vocational education at the post-secondary stage is to provide diversification in educational opportunities to enable the students to select vocations according to their aptitude, interest and abilities and thereby improving their competence for wage and self-employment. It should be seen as a strategy for giving full package of competencies for such an absorption into the work force.

For this purpose there should be clear-cut streaming at the higher secondary stage as recommended by the Kothari Commission and NCERT document, "Higher Secondary Education and its Vocationalisation" and that there should be no provision for mixing of academic and vocational electives in varying proportions as recommended by Adisheshiah Committee. For the students of the academic stream there should be a component of SUPW to the extent of 20% of the total time as a continuation of the SUPW/WE at the preceding stage of general secondary education.

PUBLIC ACCEPTANCE

Public acceptance of any programme is the acid test for its effectiveness and wider implementation. As at present the acceptability of the programme of vocationalisation of education by the society is much less than what is desirable. It is necessary to suggest ways and means to enhance public acceptance of the vocational stream of studies.

It may be achieved through wide publicity given through the mass media. The acceptance may be enhanced by pro-

viding more opportunities for occupational and education mobility. Besides, suitable incentives such as stipends, scholarships, residential facilities, etc. may be given to students who join vocational courses. Proper guidance and placement services may be organised for the benefit of students of vocational courses.

LOCATION

At present vocational courses are being offered in general schools or upgraded high schools/Jr. Colleges, etc. Majority of these institutions have inadequate facilities even for general education courses. In such institutions vocational options are limited due to lack of infrastructural facilities. The Seminar on vocational education resolved that depending on the nature of vocational courses and infrastructural facilities available and required, the programme of vocational instruction may continue to be located in the above type of institutions or outside the school system in separate vocational institutes with adequate facilities.

VOCATIONAL EDUCATION FOR RURAL, TRIBAL AND URBAN POOR

The present academic courses have proved quite unsuitable for the rural, tribal and urban poor. This fact is reflected in their high drop out rate and poor enrolment. Of those who somehow manage upto the higher secondary stage the type of education they receive does not equip them with proper employable skills. Specially designed vocational courses based on their local needs may be suggested which should emerge out of the survey of the prevailing and anticipated manpower needs. The benefit from vocational education programme in terms of an early entry into the job market at a comparatively higher wage levels and consequently a better social status may constitute enough justification for greater thrust given to vocationalisation programme for such target groups.

SIGNIFICANCE OF S.U.P.W. AS A BASE FOR + 2 STAGE VOCATIONALISATION

It is universally agreed that a Socially Useful Productive Work or Work Experience must form an integral component

of the general education system. It helps in developing proper attitudes, proper work habits and desirable values in the students. SUPW also intends to provide general preparation and pre-disposition for vocational courses at the + 2 stage.

In this respect the strengthening of SUPW/WE at the lower secondary stage and its pre-vocational orientation assume a great significance for the success of vocationalisation of higher secondary education.

ON-THE-JOB TRAINING

On-the-job training is an essential component for effective vocational education and training. Unfortunately it happens to be one of the weakest links in the implementation of vocational education at present. It may be suggested that on-the-job training should be made obligatory for all economic organisations of a minimum size. It may also be suggested that industrial and business organisations adopt educational institutions for providing on-the-job training.

MODIFICATION OF RECRUITMENT RULES

In order to accommodate those vocational students who would eventually be the job seekers, it is essential to modify some of the existing recruitment rules. However, even in those states where action has been taken to modify the rules, experience has shown that recruitment agencies have been slow in responding. Steps will have to be taken to effect such amendments, establish equivalence and accord recognition with particular reference to similar courses offered by other agencies at comparable levels.

It may be kept in view that there are a large number of agencies — governmental, public and private sector — all over the country which will have to take expeditious action in this regard.

TERMINALITY

One of the aims of higher secondary vocational education is to divert large number of students to the world of work by attracting them to need based and region specific vocational courses. Therefore, it has been recommended that these

courses should be generally terminal in nature with the provision for vertical mobility through appropriately designed bridge courses.

But the concept of terminality has not been understood properly and the pre-requisites for its public acceptance have not been satisfied. According to the predominantly prevailing viewpoint, terminality means equipping the person with certain skills and competences so as to enable him to exist from the educational system at a particular point. In substantiation of this it is often argued that higher secondary stage is a terminal stage for a majority of students who join it and this proportion will increase steadily in future. According to another viewpoint, in respect of vocational courses, the concept of terminality implies an inferior stream of studies, and hence discriminatory.

In this age of fast changing technology vocational education should not be conceived as being 'terminal' so as to be a dead end but to have suitable links with further/higher general and professional education. On the contrary, many would agree that if vocational education is not 'terminal' in character it will lead to swelling of the university enrolments causing erosion in its quality and resulting in the problem of massive educated unemployment. Yet another angle of vision could be that it should be terminal in the sense of enabling entry into the world of work and at the same time keeping open the possibilities of vertical mobility through part-time/sandwich/evening courses. It was generally agreed that the 'terminal' nature of vocational courses may be understood at the conceptual plane in our socio-economic backdrop further than on the basis of its dictionary meaning.

The recommendations of the Seminar for the tertiary stage in relation to vocational education further explains this consensus.

COURSE STRUCTURE

The curricular fix for vocational course is intimately related to conceptual dimensions presented in the preceding sections. At present, reflecting the wider conceptual interpretations, the vocational courses differ considerably with regard to their general and vocational education components.

There are three basic units in the course structure, namely, language(s), related subjects and foundation courses, vocational theory and practice. Since vocational courses are predominantly practical in nature, it is considered necessary to provide greater stress on vocational theory and practice.

It may not be desirable to lay down a rigid course structure for all types of vocational courses being offered after 10 + stage since the ratio of knowledge to skill will vary from course to course. The course structure should be such that would help develop suitable competencies for wage and self-employment including abilities for continuing education.

For courses of two-year duration at the higher secondary stage the following course structure may be suggested subject to some variations:

	% of total time
— Language(s): (Functional in nature)	15
— Related Subjects: (Science, mathematics, humanities and related studies such as entrepreneurship development)	15
— Vocational Theory and Practice: (including on-the-job training)	70

The significance of on-the-job training in vocational education has been highlighted earlier. Vocational education should be planned as co-operative venture between institutes/schools, community and employers.

DURATION

For reasons of co-terminality with the academic courses at the higher secondary stage, the vocational stream courses are of two year duration as recognized invariably by all the boards in the country. Kothari Commission had proposed post secondary stage courses of widely variable durations. It is suggested that the duration of vocational courses may vary according to the knowledge competencies and skills expected by employing agencies or for self-employment. However, parity with higher secondary courses will be available

only for those vocational courses with two years or more as duration.

TEACHER AVAILABILITY AND TRAINING

Instruction in vocational courses, for the maintenance of quality and standards, necessitates the supply of teachers with proper expertise in both theory and practice. Often the expertise of a single person may not be adequate since vocational courses demand a fairly wide base competence in theory, practice, teaching methods and communication skills.

Teachers occupy a pivotal position in the system of vocational education and their shortage and the level of their competence pose serious limitations to the initiation and expansion of the programme of vocational education. Since vocational courses are unconventional in nature and of diverse type, they would require skilled personnel corresponding to various vocations. For the supply of such teachers it would be necessary to:

- Secure services on part-time basis of those who are working in particular occupations or those who have retired and possess rich experiences of practical or theoretical instruction.
- appoint graduate/diploma holders as core faculty on regular basis and arrange for their further training in institutions like TTTIs/RCEs/ATIs/etc., which have expertise both in content and instructional techniques. Suitable incentives in the form of attractive emoluments and service conditions should be offered for attracting good teachers.
- establish at least one vocational teacher training institute in each state by converting one of the existing training institutions which has the necessary infrastructure or by creating a new institution altogether for this purpose.

EVALUATION

Evaluation in vocational courses is a specialised job. In addition to theoretical knowledge it is essential to evaluate

the performance and personality characteristics. Skill development is not instant, rather it happens over a period of time.

It is suggested that instructional objectives, based on the desired vocational competencies should be clearly spelt out for each course. The scheme of evaluation should take these objectives into account. The total evaluation should comprise of continuous assessment and comprehensive external assessment.

FINANCING FOR SELF-EMPLOYMENT

Self-employment constitutes a major justification for vocationalisation of education. However, vocationalisation has not resulted in expected or desired extent of self-employment due to a number of factors. Not the least important of these is the lack of finances and guidance for entrepreneurship. Another contributory factor is lack of co-ordination between the agencies for vocational education, on the one hand, and employment agencies, on the other.

It is suggested that sufficient incentives should be provided by banks and other financial institutions to vocational students on completion of their courses. A few specific suggestions may be offered in this regard:

- Nationalised banks and state financing institutions should extend finances on easy terms.
- Department of small-scale industries and other such agencies should prepare projects and their feasibility reports to match the educational profile of the products of vocational stream and assist them in setting up their own enterprise.

Instructional Materials

There is a serious dearth of instructional materials for vocational education in the country. In general, schools/institutions are using reference books used in colleges for imparting instructions. However, some states like Tamilnadu and West Bengal have developed some materials for the teachers as well as students. Recently NCERT has also initiated action

in this regard. However, the present mechanism of developing instructional materials does not match the requirements.

It is recommended that the following measures be taken in this respect:

- Experienced teachers may be encouraged to write text books and other instructional materials by offering suitable financial incentives which may be prescribed after evaluation.
- Institutions like TTTIs/CSTARI and other professional institutions may be involved in the production of print and non-print materials.
- Instructional materials suitable to other such courses may be procured from within and outside the country which could be translated/modified and adapted for publication.

It may be resolved that NCERT should continue to provide guidelines and model instructional materials for vocational courses.

VOCATIONAL EDUCATION AT THE TERTIARY STAGE

It is generally conceded that education should have no blind end. Even courses that are labelled 'terminal', mean that they meet certain specified objectives, ensure development in the individuals of certain competences and abilities. While they are not mainly meant to be preparatory for further education, they do not also mean closure of avenues for further educational opportunities.

The current prejudice against vocational education will not disappear unless a reasonable chance of worthwhile employment or an advantage in moving upwards into a professional or general programme of education is provided to students of vocational courses at the secondary level.

In this connection the following avenues are suggested to be opened up:

- (a) The students of vocational stream should be able to obtain a diploma for their professional growth in chosen area of specialisation. New diploma level programmes have to be designed and offered for this purpose;

- (b) The existing polytechnics and similar other institutions may allow the student of +2 vocational stream to enter the second year in corresponding courses of study wherever possible. If necessary the structure of diploma level courses may be modified to facilitate such a mobility.

SPECIAL DEGREE COURSES

The reform at the + 2 stage in the form of vocationalisation should necessarily have its impact on the +3 stage of education under 10 + 2 + 3 structure. When a substantial number of students opt for vocational stream, the degree courses in universities cannot continue to be the extension of academic stream only.

It is suggested that :

- (a) The UGC has offered a conceptual model which allows for one vocational elective out of the three in the first degree courses. These should be preferentially open to students of higher secondary vocational courses;
- (b) A few of the universities have also introduced in a very limited way, degree courses with emphasis on job orientation like Corporate Secretaryship, Tourism, Book Industry, Sericulture, Fisheries, etc. Similar type of courses should be instituted in other vocational areas for proper opportunities of higher education to vocational students.

GENERAL DEGREE COURSES

There are many degree courses in social sciences, humanities, home science and commerce which offer ready entry to higher secondary products of the vocational stream. While preparing for entry into these degree level courses is not accepted under the objectives of vocational education, such opportunities may not be closed for the products of the higher secondary vocational stream. The content of vocational course, however, should rather be determined by job market situations than the requirements of the particular degree course of general or professional education.

PROFESSIONAL DEGREE COURSES

There is often a great demand from the students of vocation streams for admission into professional courses at the degree level and sometimes reservation of seats is also demanded.

In this regard it is suggested that the products of vocational streams may not be academically equipped for such a facility in general and that the professional institutions may not accept the vocational stream students for this reason. Further, such mobility should not be granted on the basis of public demand or other extraneous considerations but on the basis of academic grounds.

It is often suggested that such a mobility be given through bridge courses specially designed for this purpose and not directly in a large number of vocational courses.

MANAGEMENT SYSTEM

To implement vocationalisation effectively and efficiently, all vocational education programmes must be coordinated through a single agency at the national level and managed through a unified system in terms of administration, R and D support, examination and accreditation, etc. Similar structural re-arrangements ought to be made at regional and state level also.

NATIONAL LEVEL

Effective implementation of the scheme of vocationalisation of education calls for appropriate management apparatus at all the five levels -- National, Regional, State, District and Institution. In this context it was resolved that at the national level an apex statutory body called National Council of Vocational Education (NCVE) should be set up as a single unified body amalgamating all the existing councils, departments, etc. and thus bringing vocational education under one umbrella. The functions of NCVE will include National Policy formulation, coordination, standardisation, certification and guidance to State Council of Vocational Education. It is further suggested that to perform research, development and training functions the existing Department of Vocationalisation of Education of NCERT which is the only organisation

working on fulltime basis in the above area should be either strengthened or converted into a Central Institute of Vocational Education (CIVE) with effective autonomy under NCERT.

REGIONAL LEVEL

Various agencies already working at regional level in the fields of general/technical education be profitably involved for the promotion of vocational education. In this context it is suggested that pre-service/in-service training of vocational teachers can best be organised by the Regional Colleges of Education, CTIS and ATIS. Preparation of source materials for vocational education may be entrusted to the Technical Teachers' Training Institutes, and apprenticeship training of vocational students can be more effectively arranged by the Regional Boards of Apprenticeship Training.

STATE LEVEL

The existing system of management of vocational education in the states is inadequate and hence ineffective. Therefore, it is suggested that each state should have a statutory State Council of Vocational Education (SCVE) with the same autonomy and function as NCVE to deal with all aspects of vocational education in the State.

At present with the exception of Karnataka, vocational education is entrusted to various departments like Directorate of Education, Higher Education, Technical Education, training and apprenticeship, etc. Likewise, evaluation and certification are taken care of by the State Boards/Councils of Higher Secondary/Intermediate Education. This is not a happy situation. Therefore, it is suggested that each State should have a separate Directorate of Vocational Education which will also work as secretariat of SCVE. The Directorate should be adequately staffed with officials representing various vocational areas. It was further resolved that SCERTs should have a separate wing for vocational education with functions such as conducting studies and surveys, curriculum development, evaluation, etc. Examination and certification should be conducted by SCVE.

DISTRICT LEVEL

Each district should have a District Vocational Coordination Committee (DVCC) with Collector as its Chairman and DVC or CEO as Member Secretary. The DVCC should have representatives from industries, commerce, employing agencies, teachers, etc. DVCC should ensure proper coordination with District Employment Generation Council and other agencies for effective implementation of the vocational programme.

INSTITUTIONAL LEVEL

An Advisory Committee with a Placement Cell should be set up in each institution to assist Head of the Institution in various matters of vocational education. The Advisory Committee should have representatives from local employing agencies, parents, vocational teachers and local officials of different departments. The Committee should be headed by a local resource/knowledgeable person with head of the institution as its Member Secretary. The Committee will take care of issues like admission of students, mobilisation and utilisation of resources, placement of students, publicity and general awareness about vocational programme, motivation for self-employment, etc.

PART — XIV

STRATEGIES FOR IMPLEMENTATION

- Vocational Survey
- Vocational Curriculum
- Instructional Materials
- Teacher Training
- Part-Time Teachers
- Infrastructural Facilities
- Apprenticeship Training
- Programme Categories
- Funding Norms
- Funding Sources
- Central Sector Scheme
- Financing for SUPW
- Centre-State Sharing
- Seed Money for Non-formal Programmes
- Target Population
- Financial Priorities
- International Aid
- Growth Rate of Economy *vis-a-vis* Magnitude of Vocational Intervention

VOCATIONAL SURVEY

The various steps that should be taken to design, develop and implement the entire programme of vocational education have been discussed in great detail. An obvious first step that has been recommended in clear terms in all the important documents is the vocational survey aiming to assess the manpower requirement, the range of available occupations, the extent to which educational and training facilities are available in the neighbourhood, etc. In this context it is suggested that the district may be treated as the basic unit and the SCERT involving DVO should conduct periodical survey using all available expertise. Manpower projections should also be available from centralised state and national level agencies established for this purpose.

VOCATIONAL CURRICULUM

Once vocational areas with good job potentials have been identified through surveys, the efforts should be concentrated on the development of an appropriate curriculum providing for general education, proper vocational education and training and adequate exposure of students to actual field conditions. Prime thrust must be for skill development augmented with related theoretical knowledge. The curriculum should provide for sequential learning-doing programme based on the minimum competencies needed for different vocations. This clearly brings home the point that vocational curriculum development is not an exercise to be left to academicians or theoreticians, but a serious process requiring major say from those who know the vocation in its finest details.

The Central Institute of Vocational Education, as envisaged at the national level, can contribute significantly in the vocational curriculum development by providing necessary guidance and bring together different agencies, user departments, employers and others for developing the curriculum.

Therefore, it is recommended that the curriculum design and development should be done under the guidance of CIVE and respective state boards offering higher secondary education.

INSTRUCTIONAL MATERIALS

Realisation of the output of any curriculum, *inter alia* depends to a great extent on the instructional materials used. Instructional material is also equally decisive for the success of the vocational programme like any other basic input. The kind of instructional materials needed for vocational students at + 2 stage has necessarily to be of a different nature than what is used for the students of general academic stream. Vocational instructional material must have an altogether different, down-to-earth practical approach to its contents in order to become an effective vehicle for development of necessary expertise and skills in the students.

Unfortunately, there is an acute dearth of such instructional materials for the vocational students which needs to be remedied urgently with active involvement of competent subject experts, professionals also in the fields under the guidance of NCERT, which has so far developed a series of exemplar instructional materials (for different vocational areas. But it would be too big an expectation to bank upon a single agency like NCERT to solve the problem which should essentially be shared at the state level utilising the respective SCERTs. The proposed CIVE at the national level and SCVE at state level can play an important role in filling this void in regard to instructional and other curricular materials.

TEACHER TRAINING

The quality of vocational teachers is another factor of prime importance marring or making for the success of vocational programme at + 2 level, because it is the vocational teacher who steers the entire teaching-learning process as per his abilities, dedication and commitment. A vocational teacher must be thoroughly oriented about the entire vocational programme, its concept, philosophy and objectives. He must learn to deliver the goods under several constraints utilising the available resources of the community.

This calls for the evolution of a suitable pre-service/inservice training programmes for vocational teachers utilising the facilities available with the Regional College of Education, CTIs and a few selected colleges of education.

We can hope to attract competent and really committed vocational teachers for + 2 level, if we are able to provide them reasonably good service conditions, job satisfaction and opportunities for their career development and promotion. The present conditions are far from being satisfactory in many of the states compelling most of the teachers to leave the teaching profession and go for more lucrative careers.

PART-TIME TEACHERS

No doubt, a good majority of vocational teachers do possess the educational minimum prescribed by different state governments, but it is equally true that most of them are devoid of worthwhile field of professional experience, which is so essential for a good vocational teacher. This deficiency can be met by providing part-time teachers drawn from the field. First-hand practical experience of the part-time teachers supplemented by sound theoretical expertise of regular teachers can prove the most effective input of training at the + 2 level.

Hence, it is recommended that for each vocational course there should be provision of one regular full-time teacher, one part-time teacher and an assistant in the school.

INFRASTRUCTURAL FACILITIES

Infrastructural facilities in terms of space, equipment and consumables probably form the costliest input for vocational education. In the context of our present state of economy it will be no better than mere wishful thinking to equip each institution with all necessary infrastructural facilities. That is why, the whole concept of vocationalisation of education is based on thorough and maximum utilisation of facilities available in the community.

To ensure maximum utilisation of facilities it is necessary that the school develops a good rapport with organisations possessing such facilities. This will largely depend upon the initiative and enthusiasm of the head of the institution. How-

ever, this problem of coordination between the school and facilities owning organisations should be tackled at the government level. Such an agreement will provide the students with opportunities for better vocational training, will expose them to actual field conditions and most likely, will make the future employers aware of the kind of vocational students being prepared by the schools. This will also be most cost effective measure for vocational education.

APPRENTICESHIP TRAINING

The products of vocational stream at the + 2 level are quite distinct from those from the ITIs and Polytechnics who have been covered under the Craftsmen and Technician Apprenticeship Training schemes. The need to bring the vocational students of the + 2 stage under the umbrella of apprenticeship scheme was emphasised time and again by several committees from various forums as an important catalyst for the promotion of vocational education. At present a few of the 120 vocational courses offered at + 2 level in the country are selected for the "Special Vocationalised Education Training Scheme" launched by the Ministry of Human Resources Development, Government of India and thus, benefit of the scheme is available only to a handful of fortunate ones from the vocational stream.

Under such circumstances the Apprenticeship Act 1961 should be suitably amended immediately to cover the + 2 vocational students. The Regional Boards of Apprenticeship Training should chalk out appropriate training programmes after identification of suitable training organisations in the government, semi-government, private as well as unorganised sectors in consultation with the NCVE and SCVE in states.

PROGRAMME CATEGORIES

It is recommended that the programmes to be financed for vocationalisation of education may be broadly classified as under:

- SUPW/WE programmes for class I to X with progressively increasing life skill and leading to pre-vocational orientation from class VIII/IX onwards.

- Vocationalisation of Higher Secondary Education for 10 per cent of the students during the 7th Plan Period and 25 per cent of the students during the first half of the nineties.
- Further education programmes for vocational stream students at the diploma, special/advance diploma and degree levels so as to ensure public acceptance of higher secondary vocationalisation.
- Non-formal programmes for out-of-school population which are essentially in nature of extension activities of existing educational institutions, industries, government service departments and professional bodies such as the Institutions of Engineers etc.
- Programmes for establishing administrative, organisational, monitoring, reviewing and coordinative bodies at the States and the Centre to ensure effective implementation of vocationalisation at the institutional, district, state, regional, and national levels.

FUNDING NORMS

Regarding the quantum of funding for education in general, it may be suggested that 6% of G.N.P. should be spent on education as recommended by Kothari Commission, as against the current 3% expenditure and a substantial portion of the increased expenditure should be on vocationalization of education at all levels.

FUNDING SOURCES

It is further recommended that the funds for vocationalisation should be mobilised from a variety of sources, which have remained untapped as under:-

- Levy of educational cess on all manufactured goods in the organised sector.
- Levy on agriculture land.
- One or two and a half per cent of all expenditure on development projects and construction activities.
- Levy on consumer goods.
- Levy on all imports.

- Levy on earnings of organised service sectors, public and private, which employ skilled and supervisory personnel.

CENTRAL SECTOR SCHEME

Higher education, technical education and apprenticeship training have always been under the overall purview of the Centre and it is recommended that vocationalisation of education must be included in this list.

FINANCING FOR S.U.P.W.

In the context of providing free and compulsory education for all upto age 14, the SUPW/WE programmes upto and including class VIII should be financed by the State Governments. The pre-vocational orientation programmes for the secondary students shall be jointly funded by the States and the Centre. The money spent on SUPW/WE programmes of the school population must be viewed as an investment on Human Resources Development which is bound to have pay-off for the productivity of the individual and hence the productivity of the agricultural, corporate and the service sectors. However, as mentioned in 1.14 there should be a centrally sponsored scheme for SUPW/WE teacher training.

CENTRE-STATE SHARING

The financing of programmes of vocationalisation of Higher Secondary Education should be shared between the States and the Centre as under:

- The Centre shall finance district vocational surveys, manpower forecasts, generation of resource materials for various courses, In-service Training of Teachers, apprenticeship training and R and D efforts and the salaries of staff and a portion of the building and equipment grants. For the above purpose a National Education Trust on the lines of UGC be established and vocational education be given adequate importance by the trust.
- A part of the cost of the buildings and equipment may have to be borne by the state governments.

- The various programmes of funding shall be organised, monitored and evaluated by the National Council of Vocational Education (NCVE) at the national level and State Council of Vocational Education (SCVE) at the state level.

Further it is recommended that further education opportunities should be provided for the following categories, funded by the Centre:

- Certificate holders from ITIs and higher secondary vocational stage shall be provided opportunities to join diploma and advanced diploma programmes on the basis of national scholarships based on income of parents.
- The products of higher secondary vocational stream and diploma holders to join existing and new degree programmes in relevant areas in the universities on the basis of national scholarships based on merit.
- Open universities to provide facilities for obtaining degrees in vocational area on self-financing basis for the working learners.

The above programmes of financing should be given serious attention since the social acceptance of higher secondary vocationalisation will directly depend on the facilities for further education.

SEED MONEY FOR NON-FORMAL PROGRAMMES

It is recommended that drop-outs and labour-force (who are predominantly illiterate) be provided educational opportunities for general/vocational education and training, through non-formal and part-time programmes offered essentially as extension activities of community schools, community polytechnics and composite training centres to be established on the basis of district vocational surveys. The cost of this development should be borne by the beneficiaries and their employers. The state and central governments may provide seed money for the generation of resource materials and training of instructors.

TARGET POPULATION

It is noticed that target population to be covered by the above programmes during the Seventh Plan period are enumerated as under:

(i) SUPW/WE Programmes:	
(a) Primary Stage.	870 lakhs/year
(b) Middle School Stage.	250 lakhs/year
(c) Secondary Schools.	110 lakhs/year
<hr/>	
Total	1230 lakhs/year
<hr/>	
(ii) Higher Secondary Vocationalisation:	
(a) During Seventh Plan (10%).	3 lakhs/year
(b) During the Eighth Plan (25%).	7.5 lakhs/year
(iii) Further Education:	
(a) 2-year diploma programmes for Higher Secondary Vocational Students and ITI products.	8,000/year
(b) Advanced/special diploma programmes for ITI and vocational stream products.	20,000/year
(c) Degree programmes in vocational subjects in existing universities.	45,000/year
(d) New community colleges for vocational degrees.	18,000/year
(e) General degree programmes for vocational stream students.	6,500/year
(iv) Out of School Population:	
(a) Drop-outs upto Class V.	120 lakhs/year
(b) Drop-outs after Class VIII.	20 lakhs/year
(c) ITI, increased intake.	0.625 lakhs/year

FINANCIAL PRIORITIES

It has been estimated by the Working Group on Vocationalisation of Education (1985) that the above coverage may involve Seventh Plan funding of Rs. 2,200 crores. Even

though this sum appears to be large, the cost of such a massive and important development will be of the order of rupees 22 crores per year, on the average. It should be possible to mobilise this fund from the variety of cesses that have been envisaged. However, it is recommended that such of those programmes and projects (such as higher secondary vocationalisation) which have commenced 9 years ago shall be pursued with greater vigour; the projects that are in demand from the society such as further education, shall be implemented urgently and those which show promise towards Human Resources Development (such as SUPW/WE) shall be assigned priority and other programmes (such as education and training for out-of-school population) may be taken up with required funds

INTERNATIONAL AID

It is essential that the expertise already acquired by UNESCO be made use of in this area and World Bank aid may be sought for such a massive development in the largest democracy of the world.

GROWTH RATE OF ECONOMY VIS-A-VIS MAGNITUDE OF VOCATIONAL INTERVENTION

In view of the 8% growth rate of our economy that has been envisaged in our Seventh Plan proposal, the middle level para professionals have a greater part to play in this increasingly competitive world and this hitherto neglected sector of education must now be assigned the top-most priority for development. Even otherwise we will have to ensure self-employment opportunities and development of entrepreneurial skills for a 42 and odd lakhs of young people of our country who will be entering the world of work every year; and there is no better way than to reorient the educational system of our country wherein at any given time there are 14 crores of students available for intervention.

APPENDIXES

Appendix A	Information Blank
Appendix B	Vocational Attitude Scale for Teachers/Parents/Students
Appendix C	Questionnaire-A Biodata
Appendix D	Pupils' Academic Motivation Scale
Appendix E	Self-esteem Inventory
Appendix F	Self-identity Questionnaire
Appendix G	Self-concept Scale
Appendix H	Occupational Aspiration Scale () Directions
Appendix I	Students' Adjustment Scale Instructions
Appendix J	Rao School Attitude Inventory

17-18

APPENDIX A

INFORMATION BLANK

PART — A

I. STATISTICAL INFORMATION:

(a) Name of the School	:	
(b) Year of Establishment	:	
(c) Year of Upgrading to Higher Secondary State	:	
(d) Strength at Plus Two Stage	:	

	XI Academic/ Vocational	XII Academic/ Vocational
(i) <i>Students</i>		
Boys		
Girls		
(ii) <i>Staff</i>		
Men		
Women		

(e) Name of the Vocational Subjects Offered:

- (i)
- (ii)
- (iii)
- (iv)

(f) Number of Students Studying in Each Vocational Course:

	Boys in XI Std.	XII Std.	Girls in XII Std.
(i)			
(ii)			
(iii)			
(iv)			

(g) Number of Staff Handling Vocational Subjects:

Sl. No.	Name	Subjects taken	General Quali- fication	Profes- sional Quali- fication	Year of Expe- rience	Full time Tea- chers	Part time Tea- chers
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II. FUNCTIONING OF VOCATIONAL EDUCATION STREAM:

(a) Choice of Subject:

- (i) Who suggested the introduction of the vocational subject?
Headmaster/Teachers/Public/Department.
- (ii) Was there a discussion in the staff meeting about the intro-
duction of the vocational subject? Yes/No.
- (iii) What was the general reaction of the Teachers?
Favourable/Neutral/Unfavourable.
- (iv) Were the students involved in the choice of the subject?
Yes/No.
- (v) Were the industrialists/factory owners/agriculturists in the area
consulted before the introduction of the course? Yes/No.
- (vi) What was there reaction to the proposal?
Favourable/Neutral/Unfavourable.

PART — B

I. PREPARATION:

- (i) Whether the teachers were trained beforehand to prepare them-
selves for the introduction of the vocational stream? Yes/No.
- (ii) Whether the public was motivated about the introduction of
the vocational stream? Yes/No.
- (iii) Whether there was support from the public? Yes/No.
- (iv) Whether there was criticism from the public? Yes/No.

II. INTRODUCTION:

- (a) *Selection of Students:* Mark the number which is correct
according to you:
 - (i) The choice of the vocation was left to the students.
 - (ii) Students for vocational courses were selected at the dis-
cretion of the Headmaster.
 - (iii) Students were selected after consulting the teachers.

- (iv) Students were selected after consulting the parents.
- (b) *Selection of Staff*: Tick the number which is suitable for you:
- Staff were selected to teach vocational subjects by the Headmaster.
 - It is the choice of the Department.
 - It is the free choice individual.
 - Staff were selected due to the public influence.
- (c) *Equipment*:
- How is the school equipped to teach vocational courses?
Well equipped/barest minimum/inadequate.
 - How are the equipments to the school bought?
From grants received/public donations.
- (d) *Help from Local Industries*:
- In what ways the local industries/factories are helpful in giving apprenticeship training to the students?
Fully/Partial/Nil.
 - Whether the students are absorbed in those industries/factories after the completion of their courses:
Yes/to some extent/No.

III. PRACTICAL WORK:

Types of Practicals conducted:

- Within the school.
- With the help of Factories/Industries.
- Field trip.

IV. PROBLEMS EXPERIENCED:

- What are the problems experienced at the preparation level?
- What were the problems experienced at the introduction level?
- Was there any problem experienced in executing a particular vocation? If yes, what were the problems?

V. RESULTS IN THE PUBLIC EXAMINATION:

	<i>Academic No. of Students Appeared/Passed</i>	<i>Vocational No. of Students Appeared/Passed</i>
1980		
1981		
1982		

VI. PLACEMENT OF STUDENTS AFTER COMPLETING THE COURSE:

	1980	1981	1982
(i) Total number of students who have completed the Vocational Course:			
(ii) Approximate number of students who are absorbed by the local industries:			
(iii) Approximate number of students who are self-employed:			
(iv) Approximate number of students who seek higher education:			
(v) Number of students who got employment other than the one for which they studied:			
(vi) Number of students who are unemployed:			

VII. SUGGESTIONS:

APPENDIX B

VOCATIONAL ATTITUDE SCALE FOR TEACHERS/PARENTS/STUDENTS

Teachers/Students of Vocational/
Non-Vocational Course or X Std. :

Sex :

Name of the School :

Location of the School:

(a) Place :

(b) District :

Parent of Vocational/Non-
Vocational Student :

Sex :

Total annual income of the parent:

Place :

District :

INSTRUCTIONS:

Twenty-five sentences are given below. They are given with a view to understand your opinion regarding Vocational education. Whatever may be the answer, your *personal opinion* is the best answer. The main idea of this questionnaire is to find out *what you think* about each sentence. Your answers will be kept confidential. Please read the sentences carefully and then select any one of the answers given below and mark it in the column given next to each sentence. (A) Strongly agree, (B) Agree, (C) Unable to decide, (D) Disagree, (E) Strongly disagree.

<i>Sentences</i>	<i>Strongly Agree</i>	<i>Agree</i>	<i>Unable to Decide</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
1	2	3	4	5	6
1. Students get employment easily due to vocational education.	A	B	C	D	E
2. The unemployment problem is solved to some extent because of vocational education.	A	B	C	D	E
3. There is not adequate encouragement from the public for vocational education.	A	B	C	D	E
4. There are not enough trained teachers to teach vocational subjects.	A	B	C	D	E
5. Due to the introduction of vocational education the economic development of the country is possible.	A	B	C	D	E
6. Due to the introduction of Vocational education in schools, the number of pupils going to the colleges becomes less. (Unnecessary crowd is prevented)	A	B	C	D	E
7. The government has to bear more expenditure due to the introduction of vocational education in schools.	A	B	C	D	E
8. There are no proper facilities in schools to teach vocational subjects.	A	B	C	D	E
9. Students are able to get their education accor-					

1	2	3	4	5	6
ding to their tastes and interest.	A	B	C	D	E
10. Majority of the students want to join in the general stream only.	A	B	C	D	E
11. Students who get low marks alone join in the vocation stream.	A	B	C	D	E
12. Teachers who taught vocational education feel, that there is a gap between them and teachers teaching general education among the public.	A	B	C	D	E
13. There is no need to get apprenticeship afterwards, as the vocational students are receiving training during their course of study itself.	A	B	C	D	E
14. Majority of the students feel that it is below their dignity to opt for vocation education.	A	B	C	D	E
15. There is change for the students to earn a little while they learn.	A	B	C	D	E
16. Employers for the industries are easily available due to the introduction of vocational education in schools.	A	B	C	D	E
17. Majority of the parents are not aware of the benefits of vocational education.	A	B	C	D	E
18. Students who opt for vocational education easily get through in the examination.	A	B	C	D	E

	1	2	3	4	5	6
19. There is no proper background in the lower classes for the students who select vocational education in the higher secondary level.		A	B	C	D	E
20. Since there is opportunity for students to continue in the same school and get vocational education, they are not affected psychologically.		A	B	C	D	E
21. The syllabus for vocational education is heavy.		A	B	C	D	E
22. Students get first hand knowledge as they go for field trips.		A	B	C	D	E
23. Students score high marks through practical examination.		A	B	C	D	E
24. There is chance for self-employment for those who had taken vocational education in schools.		A	B	C	D	E
25. There is very little chance for girls to get vocational education in the co-educational schools.		A	B	C	D	E

APPENDIX C

QUESTIONNAIRE-A BIODATA

-
- | | |
|-----------------------------|---|
| 1. Your Name | : |
| 2. Age in years and months | : |
| 3. a) Class, b) Stream | : |
| 4. Father's/Guardian's Name | : |
| 5. Local Address | : |
-

INFORMATION ABOUT YOUR FAMILY

- | | |
|---|---|
| 1. Number of brothers | : |
| 2. Number of sisters | : |
| 3. Your own rank among them
(Starting from the youngest) | : |
| 4. Education of your family | : |
-

					<i>Post Graduate and above</i>
	<i>Literate</i>	<i>Primary</i>	<i>Matric</i>	<i>Graduate</i>	

Father:

Mother:

Brothers:

- 1.
- 2.
- 3.

Sisters:

- 1.
 - 2.
 - 3.
-

(If you have more than 3 brothers or sisters, give information about only three having more education).

GIVE OCCUPATIONAL INFORMATION ABOUT YOUR FAMILY

(a) Father :

(b) Mother :

(c) Brothers:

1.

2.

3.

Sisters:

1.

2.

3.

APPENDIX D

PUPIL'S ACADEMIC MOTIVATION SCALE

PERSONAL DETAILS:

- | | |
|------------------------|---|
| 1. Name of the School | : |
| 2. Name of the Student | : |
| 3. Class and Section | : |
| 4. Date | : |
| 5. Place | : |
| 6. Age | : |
-

DIRECTIONS:

We are trying to find out how students think and feel about a number of important topics. In order to do this, we would like to ask you to answer some questions. This is not an intelligence test, nor information test. There are no 'right' or 'wrong' answers. The best and only correct answer is **YOUR PERSONAL OPINION**. Whatever is your answer, there will be many who agree and many who disagree. What we really want to know is **HOW YOU FEEL** about each statement.

Please read each statement very carefully, and then indicate your agreement or disagreement by marking it, according to the following scale, in the appropriate space beside each statement:

- (A) Agree.
- (B) Strongly Agree.
- (C) Disagree.
- (D) Strongly Disagree.

You may have as much time as you need to read each statement very carefully and give your opinion on it in the best way you can.

Please encircle your answer in the box.

(A) <i>Agree</i>	(B) <i>Strongly Agree</i>	(C) <i>Dis- agree</i>	(D) <i>Strongly Dis- agree</i>	Statements
1	2	3	4	5
A	B	C	D	1. Late afternoon is the best time of the day.
A	B	C	D	2. Many children have often been punished without cause.
A	B	C	D	3. Students should be made to go to school before they are 18 years old.
A	B	C	D	4. Being right is more important than being kind.
A	B	C	D	5. School is more fun when teachers let students do things they want to.
A	B	C	D	6. Pupils who try should get good grades even if they make mistakes.
A	B	C	D	7. Successful people are those who make the most money.
A	B	C	D	8. The best way to spend a free evening is with a good book.
A	B	C	D	9. Most young people do not want to go to school.
A	B	C	D	10. Some new ideas are interesting, but most of them are not.
A	B	C	D	11. Practical people are usually highly respected.
A	B	C	D	12. Knowing the answer is more important than knowing where to get the answer.
A	B	C	D	13. Many young people complain about their miseries.
A	B	C	D	14. The best people refuse to depend on other persons.

1	2	3	4	5
A	B	C	D	15. Some teachers make school more interesting than others.
A	B	C	D	16. A person's feelings on a topic are not as important as the facts.
A	B	C	D	17. There are more important things in the world than making money.
A	B	C	D	18. It does not really help much to study about people from other lands.
A	B	C	D	19. Life is mostly sorrow with just a little joy.
A	B	C	D	20. Some students have to study more than others.
A	B	C	D	21. Many youngsters often want to go away from home.
A	B	C	D	22. Being a good speaker is just as important as being a good speller.
A	B	C	D	23. Some teachers seem to enjoy making students suffer.
A	B	C	D	24. Our whole trouble is that we won't let God help us.
A	B	C	D	25. Most people worry more before they take a test than during the test.
A	B	C	D	26. No one seems to understand young people.
A	B	C	D	27. Learning to co-operate is more important than learning to compete.
A	B	C	D	28. Most people would like school better if teachers did not give grades.
A	B	C	D	29. The world we live in is a pretty lonesome place.
A	B	C	D	30. Social progress can only be achieved by returning to our glorious past.

1	2	3	4	5
A	B	C	D	31. It is very foolish to advocate government support to education.
A	B	C	D	32. Most people's hardest battles are with themselves.
A	B	C	D	33. There is nothing new under the sun.
A	B	C	D	34. Helping other people is the key to happiness.
A	B	C	D	35. Life seems to be one big struggle after another.
A	B	C	D	36. Most people just don't care for others.
A	B	C	D	37. The best way to achieve security is for the government to guarantee jobs.
A	B	C	D	38. Some people do not appreciate the value of an education.
A	B	C	D	39. Many new ideas are not worth the paper they are printed on.
A	B	C	D	40. Many teachers are not considerate of students' feelings.
A	B	C	D	41. Teachers are generally underpaid.
A	B	C	D	42. Being unhealthy is worse than being unhappy.
A	B	C	D	43. Most young people feel uncomfortable around someone of the opposite sex.
A	B	C	D	44. It is better to forget than to forgive.
A	B	C	D	45. Pupils who copy during an examination should fail the test.
A	B	C	D	46. Young people should be free to follow their own desires.
A	B	C	D	47. Listening to a good speaker is the best way to learn.
A	B	C	D	48. The present is all too often full of unhappiness.

1	2	3	4	5
A	B	C	D	49. Most people just don't know what is good for them.
A	B	C	D	50. Understanding yourself helps you to understand others.
A	B	C	D	51. People who dream a lot at night are apt to be crazy.
A	B	C	D	52. Familiarity breeds contempt, so one should never be too friendly.
A	B	C	D	53. There is a real limit to man's intelligence.
A	B	C	D	54. People who are insulted generally deserve to be.
A	B	C	D	55. Experience may be a good teacher, but schools are better.
A	B	C	D	56. Wasting time is even worse than wasting money.
A	B	C	D	57. People who are quick thinkers usually jump to conclusions.
A	B	C	D	58. Most people do not have good ideas until they grow up.
A	B	C	D	59. When people are unhappy, they should talk to someone about it.
A	B	C	D	60. Looking good is just as important as being good.
A	B	C	D	61. The best part of education is that which people teach themselves.
A	B	C	D	62. Famous people usually have a lot of money.
A	B	C	D	63. Most people cannot learn from the experience of others.
A	B	C	D	64. The dreamer is a danger to society.
A	B	C	D	65. Most teachers like to take the students to task if they have the chance.
A	B	C	D	66. God helps those who help themselves.

1	2	3	4	5
A	B	C	D	67. One can never desire too much of a good thing.
A	B	C	D	68. Being a liar is better than being a gossip.
A	B	C	D	69. Asking usually gets you into trouble.
A	B	C	D	70. Not many people in the world are really kind.
A	B	C	D	71. The biggest part of being successful is determination.
A	B	C	D	72. Teachers know a more and do less than most other people.
A	B	C	D	73. Hope is really no better than worry.
A	B	C	D	74. School is not all that it's cracked up to be.
A	B	C	D	75. Everything that people do is either right or wrong.
A	B	C	D	76. Quick thinking is always better than being polite.
A	B	C	D	77. The gentle person often treats himself severely.
A	B	C	D	78. Everybody ought to do something worthwhile everyday.
A	B	C	D	79. All those who failed have worked in vain.
A	B	C	D	80. We are never really as happy as we think we are.

APPENDIX E

SELF-ESTEEM INVENTORY

Measures evaluation attitudes toward self in several domains — generally answered 'Like me', 'Unlike me'. Four factors emerged from factor analysis: self-derogation, leadership popularity, family-parents and assertiveness, anxiety.

Like me / Unlike me

1. I often wish I were someone else.
 2. I find it very hard to talk in front of a group.
 3. There are lots of things about myself I'd change if I could.
 4. I can make up my mind without too much trouble.
 5. I'm a lot of fun to be with.
 6. I get upset easily at home.
 7. It takes me a long time to get used to anything new.
 8. I'm popular with people of my own age.
 9. My family expects too much of me.
 10. My family usually considers my feelings.
 11. I give in very easily.
 12. It's pretty tough to be me.
 13. Things are all mixed up in my life.
-

Like me / Unlike me

14. Other people usually follow my ideas.
15. I have a low opinion of myself.
16. There are many times when I'd like to leave home.
17. I often feel upset about the work I do.
18. I'm not as nice looking as most people.
19. If I have something to say, I usually say it.
20. My family understands me.
21. Most people are better liked than I am.
22. I usually feel as if my family is pushing.
23. I often get discouraged in what I am doing.
24. Things usually don't bother me.
25. I can't be depended on.

SELF-IDENTITY QUESTIONNAIRE

As a student how much are you like the following kinds of persons? Please reply by circling one of the numbers on each of the scales below. A circle round a number at or near 9 shows that you are very much like the person described. A circle round a number at 1 or near 1 shows that you are not at all like the person described. Intermediate values show differing degrees of likeness.

[illegible]

APPENDIX G

SELF-CONCEPT SCALE

INSTRUCTIONS:

Here are given fifty-one statements. Below each statement are given five responses (Strongly Agree, Agree, Undecided, Disagree and Strongly Disagree). Please read each statement carefully and respond to it by marking a tick on any of the five responses given. 'If you really strongly agree with the statement, mark () on 'Strongly Agree'. If you only agree with the statement, mark () on 'Agree' and so on.

EXAMPLE:

Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree.

Here the individual 'X' agrees with the statement and therefore has marked () response 'Agree'.

There is no right or wrong response. Try to give your response according to what you feel about yourself in reference to that statement. Your answers will be kept confidential.

1. In general, I believe, I am a fairly worthwhile person.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
2. I like and feel pretty good towards myself.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
3. I worry over humiliating situations more than most persons.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
4. I can perform my best in a vocation or job against an opponent who is much superior to me.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
5. I often feel that my movements are clumsy.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
6. I think I have an attractive personality.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
7. If given a chance, I could do something that would be of much benefit to the world.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree)

8. I tend to be quick and certain in my actions.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
9. I think of myself as a successful person.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
10. At times I am uncharitable to those who love me.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
11. Sometimes I feel depressed for no apparent reason at all.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
12. I frequently feel thwarted because I am unable to do as I desire.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
13. I often feel I get blamed or punished when I don't deserve it.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
14. I find it hard to continue work when I do not get enough encouragement.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
15. When upset emotionally I take much time to recover.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
16. I find it hard to do my best when people are watching.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
17. At times I indulge in false excuses to get out of things.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
18. I prefer not to spend much time dwelling on the past.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
19. I am unwanted by those I feel who are important to me.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
20. I am satisfied to a large extent about my sex matters.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
21. I become upset by criticism even if it is good or meant well.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
22. I look forward to prepare myself to attend what I intend to.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
23. My greatest weakness is that I find it difficult to complete my work without assistance from others.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
24. It is my conviction that people in general tend to grow more conservative after the age of forty.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).

25. I am as good as anyone else.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
26. If I were young again I would try to do things which I could not do earlier.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
27. The members of my family often take advice and suggestion from me on all matters.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
28. When things go wrong I pity or blame myself.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
29. I sometimes think or imagine of performing sexual act that many people consider unnatural.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
30. I certainly feel useless at times.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
31. I spend much of the time worrying over the future.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
32. I find difficult to control my weight.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
33. I can always hear and see things as well as most other people.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
34. I don't get invited out by friends as often as I would really like.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
35. At times I brag about my qualities before others.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
36. I am fairly able to recall the significant events of my early childhood.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
37. I can recover easily and quickly from social blunders.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
38. I have several times given up doing a thing because I thought too little of my ability.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
39. I frequently fail to recollect several things which I am to do.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
40. I see it is a bad mistake to spend most of my time worrying over the future, instead I prefer to try to find some pleasure in every present moment.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).

41. I am often in low spirits.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
42. It is very important to me to feel that what I am doing is very worthwhile or meaningful.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
43. I enjoy mixing with people.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
44. I can tackle new situations with a reasonable degree of assurance.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
45. At times I feel a painful sense of loneliness and want very much to share an experience with someone else.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
46. I can almost always go to sleep at night without any difficulty.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
47. When luck turns against me, I pray God to make it in favour of me.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
48. Sometimes I would become a respectable person of society.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
49. I believe that everyone is responsible for what he is as for what he does.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
50. I deserve severe punishment for my sins.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).
51. I usually prefer to do things in tried way rather than experimenting new and different ways.
(Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree).

APPENDIX H

OCCUPATIONAL ASPIRATION SCALE ()

DIRECTIONS

This set of questions concerns your interest in different kinds of jobs. There are eight questions. Each one asks you to choose one job out of ten presented. Read each question carefully. They are all different. Answer each one the best you can by placing a cross mark (X) against the occupation of your preference. Please do not omit any item.

Q. 1. Of the jobs listed in this question, which one is the BEST ONE you are REALLY SURE YOU CAN GET when your SCHOOLING IS OVER?

- | | | |
|------|-------|---|
| 1.1 | ..... | Lawyer. |
| 1.2 | ..... | Agricultural Inspector. |
| 1.3 | ..... | Doctor. |
| 1.4 | ..... | Primary School Teacher. |
| 1.5 | ..... | Diploma in the Indian Foreign Service. |
| 1.6 | ..... | Peon. |
| 1.7 | ..... | Psychologist. |
| 1.8 | ..... | Motor Mechanic. |
| 1.9 | ..... | Travelling Salesman for a wholesale firm. |
| 1.10 | ..... | Postman. |

Q. 2. Of the jobs listed in this question which one would you choose if you were FREE TO CHOOSE ANY OF them you wished when your SCHOOLING IS OVER?

- | | | |
|-----|-------|------------------------|
| 2.1 | ..... | Government Contractor. |
| 2.2 | ..... | Insurance Agent. |
| 2.3 | ..... | Member of Parliament. |
| 2.4 | ..... | Clerk in an Office. |
| 2.5 | ..... | State Governor. |

- | | | |
|------|-------|---------------------------------------|
| 2.6 | ..... | Maid/Man Servant. |
| 2.7 | ..... | Owner — Operator of a Printing Press. |
| 2.8 | ..... | Electrician. |
| 2.9 | ..... | Priest (Pujari). |
| 2.10 | ..... | Truck Driver. |

Q. 3. Of the jobs listed in this question, which one would you choose if you were FREE TO CHOOSE ANY OF them you wished when your SCHOOLING IS OVER?

- | | | |
|------|-------|--------------------------------|
| 3.1 | ..... | Airline hostess. |
| 3.2 | ..... | Trained Mechanic. |
| 3.3 | ..... | Captain in the Army. |
| 3.4 | ..... | Midwife (Dai). |
| 3.5 | ..... | Supreme Court Justice. |
| 3.6 | ..... | Restaurant Waiter. |
| 3.7 | ..... | Instrumental Musician. |
| 3.8 | ..... | Machine Operator in a Factory. |
| 3.9 | ..... | Librarian. |
| 3.10 | ..... | Plumber. |

Q. 4. Of the jobs listed in this question, which ONE would you choose if you were FREE TO CHOOSE ANY OF them you wished when your SCHOOLING IS OVER?

- | | | |
|------|-------|---|
| 4.1 | ..... | Novelist. |
| 4.2 | ..... | Soldier in the Army. |
| 4.3 | ..... | Bank Manager. |
| 4.4 | ..... | Taxi Driver. |
| 4.5 | ..... | Cabinet Minister in the Central Government. |
| 4.6 | ..... | Petrol Pump Attendant. |
| 4.7 | ..... | Artist who Paints Pictures. |
| 4.8 | | Lady Village Level Worker.
(Gram Sevika) |
| 4.9 | ..... | Photographer. |
| 4.10 | ..... | Coal Miner. |

Q. 5. Of the jobs listed in this question, which is the BEST ONE you are REALLY SURE YOU CAN HAVE by the time you are 30 years old?

- 5.1 Dentist.
- 5.2 Physical Educational Instructor.
- 5.3 Scientist.
- 5.4 Carpenter.
- 5.5 Chairman of a Large Municipality.
- 5.6 Wood Cutter.
- 5.7 Newspaper Correspondent.
- 5.8 Bus Driver.
- 5.9 Steno-typist to an Officer.
- 5.10 Farm Worker.

Q. 6. Of the jobs listed in this question, which one would you choose to have when you are 30 YEARS OLD, if you were FREE TO HAVE ANY OF them you wished?

- 6.1 Accountant in a Large Government Office.
- 6.2 Revenue Record Keeper (Karnam).
- 6.3 College Lecturer.
- 6.4 Fisherman.
- 6.5 Director of Department in State Government.
- 6.6 Night Watchman.
- 6.7 Radio Announcer.
- 6.8 Police Constable.
- 6.9 Receptionist.
- 6.10 Railway Signalman.

Q. 7. Of the jobs listed in this question, which is the BEST ONE you are REALLY SURE YOU CAN HAVE by the time you are 30 YEARS OLD?

- 7.1 Chemist.
- 7.2 Nurse.
- 7.3 Owner of a Farm or Factory which Employs 100 People.

- | | | |
|------|-------|-----------------------------|
| 7.4 | ..... | Shop Attendant. |
| 7.5 | ..... | District Magistrate. |
| 7.6 | ..... | Shoe-shiner. |
| 7.7 | ..... | Commercial Artist. |
| 7.8 | ..... | Typist. |
| 7.9 | ..... | Social Welfare Worker. |
| 7.10 | ..... | Cloth Presser in a Laundry. |

Q. 8. Of the jobs listed in this question which ONE could you choose to have when you are 30 years old, if you were FREE TO HAVE ANY of them you wished?

- | | | |
|------|-------|---|
| 8.1 | ..... | Farm Owner and Operator. |
| 8.2 | ..... | Railway Guard. |
| 8.3 | ..... | Engineer. |
| 8.4 | ..... | Door-to-door Salesman of Home Products. |
| 8.5 | ..... | Airline Pilot. |
| 8.6 | ..... | Sweeper. |
| 8.7 | ..... | Owner of a Small Hotel. |
| 8.8 | ..... | Tailor. |
| 8.9 | ..... | Cashier in a Firm. |
| 8.10 | ..... | Restaurant owner. |

APPENDIX I

STUDENTS' ADJUSTMENT SCALE INSTRUCTIONS

This is not an examination of academic test. Hence, please feel relaxed in answering this test. Your answers will be kept confidential. Therefore, be FRANK and FREE in giving your answers.

In your classroom, you have to adjust constantly to your teacher and her teaching, to your companions, to the various subjects you have to learn, to the physical conditions of your classroom, and occasionally to your principal and school:

1. Please read the statements carefully, encircle the number of only those statements that are applicable to you.
2. In the ranking column, rank any five statements that are most applicable to you, in the order of preference.

I. ADJUSTMENT TOWARD THE CLASS TEACHER:

	<i>My Rank of Preference</i>
1. My teacher teaches according to the mental ability of the students.
2. My teacher is very strict.
3. I feel free to talk to and discuss with my teacher.
4. Equal attention is not given to students in class.
5. I do not feel hesitant to ask my teacher questions.
6. My teacher is not frank and open with me.
7. My teacher pays attention to whatever I say.
8. My teacher comes late to class.
9. I feel that my teacher mixes freely with us.

*My Rank of
Preference*

10. My teacher is sarcastic and insults me publicly.
11. My teacher encourages me very much in my studies.
12. I cannot approach my teacher easily as she does not show willingness to help.
13. My teacher is kind and friendly.
14. I feel that my teacher does not understand my problems.
15. My difficulties are solved by my teacher.
16. My teacher does not smile and is mostly serious.
17. My teacher has a good knowledge of her subjects.
18. I feel that my teacher does not give me enough opportunities to develop my personality.
19. I would be happy if we had frequent tests.
20. I do not like to attend class because my teacher is boring and dull.
21. My teacher is jolly and humorous.
22. My teacher is pre-occupied with her/his work and has no time for her pupils.
23. It is encouraging to see my teacher work hard.
24. My teacher wastes time in class by telling jokes.
25. My teacher has the patience to explain till I understand.
26. My teacher has superior, aloof and overbearing attitudes.
27. My teacher makes her lessons interesting and lively.
28. My teacher is partial to brighter students.

*My Rank of
Preference*

29. I confide in my teacher because I trust her.
30. My teacher lacks sympathy and understanding when she deals with me.

II. ADJUSTMENT WITH THE HEADMASTER

31. I converse freely with my principal because who is good natured and friendly.
32. I am afraid of my principal and therefore behave well in her presence.
33. My principal understands and therefore I behave well in her presence.
34. I do not know my principal well enough because she is busy and I hardly meet her.
35. My principal does not stand on her dignity but mixes with us very well.
36. I feel unhappy because our principal wants us only to study and not to play.
37. My principal is interested in the school and manages it well.
38. I do not like my principal because she corrects me in front of the whole class.
39. I like my principal because she forgives us when we do wrong.
40. I do not approach my principal for anything because she gets angry very soon.

III. ADJUSTMENT WITH COMPANIONS

41. I feel free in the company of my classmates as they mix with everyone freely.
42. There are cliques (groups) in our class and I feel left out.
43. Some of the habits of my classmates irritate me.
44. I trust my classmates because they are united and co-operative.

*My Rank of
Preference*

45. I love my classmates because they are all united and co-operative.
46. I do not like some of my classmates who are selfish and who do not want to share their knowledge.
47. I feel happy in the company of my classmates because they are good natured and friendly.
48. I feel irritated with my classmates who are narrow-minded and who carry tales.
49. I like my classmates because they are frank and outspoken.
50. I avoid the company of those classmates who are proud and boast a lot.
- IV. ADJUSTMENT WITH VARIOUS SUBJECTS
51. I find that most of my subjects are interesting.
52. I do not have subjects which I like in the syllabus.
53. I like my subjects because I like the teacher who teaches them.
54. I am disinterested in certain subjects because they are not needed in later life.
55. I feel that teachers create interest in us to learn difficult subjects.
56. I have a natural dislike for certain subjects and do not feel like studying them.
57. I enjoy some classes because the teachers make them interesting.
58. I feel that some subjects are not taught properly.
59. Sufficient homework is given to us in various subjects.
60. I study only those subjects which are easy and to my liking.

*My Rank of
Preference*

V. ADJUSTMENT WITH CLASSROOM

61. I love to be in my classroom because it is spacious and well ventilated.
62. My classroom is very hot and there are not enough fans.
63. I feel good to be in my classroom because it is always tidy and clean.
64. I feel uncomfortable in class location and unhealthy surroundings of my classroom.
65. I feel happy about the good location and healthy surroundings of my classroom.
66. There is no atmosphere of study in my classroom as there is too much noise coming from outside.
67. The sitting arrangement in our class is changed frequently so that we get a change of being next to different companions.
68. The desks and chairs in our classroom are quite comfortable.
69. There are no facilities in our classroom for group study.
70. The blackboard in our classroom is not suitably placed.

VI. ADJUSTMENT WITH SCHOOL

71. I like my school because individual interest is taken in the students.
72. The library facilities in our school are inadequate.
73. My school is a second home for me, as the principal, teachers and companions are friendly.
74. I am not happy with my school as importance is given only to studies and not to games and extra curricular activities.
75. I would not like to change my school because it places more emphasis on discipline and character formation.

*My Rank of
Preference*

76. Going to school daily is repulsive to me.
77. I like my school because of its good and
impressive building.
78. I am proud of my school because it main-
tains a high standard of education.
79. The rules of the school seem meaningless
to me.
80. It is difficult to go to school as it is far
away from the city.

APPENDIX J

RAO SCHOOL ATTITUDE INVENTORY

It consists of 30 questions covering various aspects of the school such as teachers, school, subjects, class fellows, home work, curricular activities and parental attitude to school as perceived by the pupils. Each question has five category responses such as Always, Most often, Frequently, Sometimes and Never out of which one needs to be checked.

The respondent has to check each of the following items on a 5-point scale of frequency.

	A	B	C	D	E
1. Do you think that most of your teachers are kind to you?					
2. Do most of your teachers make the lesson interesting?					
3. Do you think that your teachers give too much of home work?					
4. Do you think that the principal of this school is too strict with the students?					
5. Are you afraid of your teachers?					
6. Do most of your teachers command respect from students?					
7. Do you dislike certain teachers in this school?					
8. Do you feel that your teachers do not understand you?					
9. Are you proud to be a student in this school?					
10. Do you ever feel like staying away from school?					

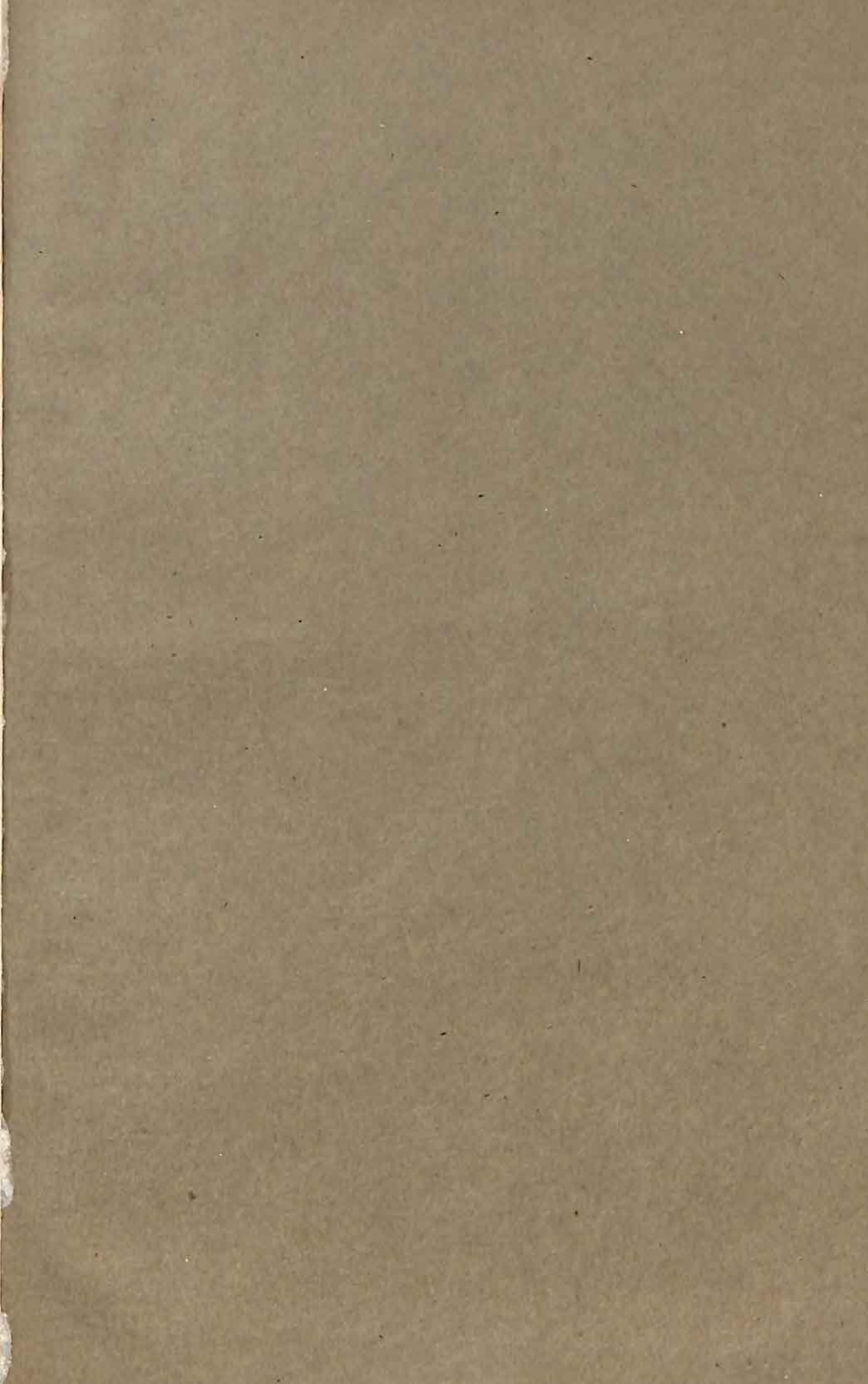
A B C D E

11. Do you think that your success in life depends upon your success in school?
 12. Do you think that there are too many rules and regulations in your school?
 13. Do you think that your school prepares you for future occupations?
 14. Do you feel that what you learn in the school would be useful even after you leave the school?
 15. Do you like all the subjects you are taking in this school?
 16. Do you find your studies dull or uninteresting?
 17. Do you take pride in achieving well in your studies?
 18. Does your school provide good opportunities for sports, games and dramatics?
 19. Do you think that participation in sports, games and dramatics is more a hindrance than help to students?
 20. Do you think that the 'home work' is a burden on you?
 21. Have you found the students in this school friendly?
 22. Do you like most of your classmates in this school?
 23. Do you help your classmates in their subjects when they seek your help?
 24. Do you feel that some of the students in your school do not like you?
 25. Do your parents supervise your study at home?
 26. Do your parents consider that sending you to school is a waste of money?
 27. Have your parents placed high hopes upon your education?
-

	A	B	C	D	E
--	---	---	---	---	---

28. Do you feel that your parents send you to school just to get rid of your presence at home?
29. Do you go to the school because of the compulsion of your parents?
30. Do your parents want you to change your school?





ABOUT THE AUTHOR



Dr. G. Shivarudrappa, M.A., M.Ed., Ph.D., has been active in the field of education since 1951. He has worked in various capacities as teacher, headmaster of high school, lecturer, reader and Professor of Education for post-graduate studies in the subject. Presently he is Head & Dean, Faculty of Education, Karnatak University, Dharwar.

Dr. Shivarudrappa has been an activist in the professional organisations of teachers and teacher-educators. He is now President of the Karnatak State Association of Teacher-Educators.

He has a number of research publications to his credit, and has successfully guided a number of students in their research leading to the award of a Ph.D. degree in Education. He has worked as an Hon. Director of Research Project, sponsored by the Planning Commission, Government of India, and the Department of Planning, Government of Karnataka.

His book on *Philosophical Approach to Education*, published by Himalaya Publishing House, Bombay, has been very well received all over the country.

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